Medical Lib.
MAY 20 1922

The

British Medical Journal

The Journal of the British Medical Association.

INCLUDING AN EPITOME OF CURRENT MEDICAL LITERATURE

WITH SUPPLEMENT.

No. 3201. SATURDAY, MAY 6, 1922. **Price 1/3**

IN THE PRESS,
READY IMMEDIATELY.
350 Pages. Crown 8vo. Fully Illustrated
Price 12s. 6d. net.

AURAL SURGERY

A Handbook for the Student and Practitioner.

BY

WILLIAM WILSON, M.D.,

Hon. Surgeon to St. John's Hospital for the Ear; Oto-Laryngologist to the Withington & Crumpsall Hospitals and to the Booth Hall Infirmary for Children, Manchester.

MESSRS. SHERRATT & HUGHES, MANCHESTER.

By BEDFORD FENWICK, M.D.,
Consulting Gynæcologist to the Hospital for Women, Soho Square.

UTERINE FIBROIDS AND OTHER PELVIC TUMOURS.

THIRD EDITION. With Tables and Analyses of 1,000 gynæcological laparotomies.

"Dr. Fenwick's results are remarkably good."—THE LANCET.

Price 10s. 6d. net.

BALE, SONS & DANIELSSON, LTD.,
85, Great Titchfield Street, W.

STUDENTS' SYNOPSIS SERIES.

JOHNSTON'S REGIONAL ANATOMY. 11 Illus. 12s. 6d. net.
BURNET'S MATERIA MEDICA. 4s. 6d. net.
BACK & EDWARDS' SURGERY. 12s. 6d. net.
COW'S PHARMACOLOGY. 16 Illus. 7s. 6d. net.
JAMESON & MARCHANT'S HYGIENE. 18s. net.
ROBERTS' PHYSIOLOGY. 73 Illus. 15s. net.
UNDERWOOD'S DENTISTRY. 10 Ills. 9s. 6d. net.
GOULD'S SURGICAL PATHOLOGY. 6s. net.

J & A. CHURCHILL, 7, Gt. Marlborough St., W. 1.

TREATMENT OF DISEASES OF THE SKIN. 3RD EDITION. 12s. 6d net.
By KNOWSLEY SIBLEY, M.D.Camb.
London: EDWARD ARNOLD, 41 & 43, Maddox St., W.

SECOND EDITION. Demy 8vo. Price 3/6 net, post. 3d.

EXOPHTHALMIC GOITRE.

By WALTER EDMUNDS, M.A., M.Ch.Cantab., F.R.C.S.
BAILLIÈRE, TINDALL & COX, 8, Henrietta Street, Covent Garden, London, W.C. 2.

THE PRACTICE OF

MEDICINE IN THE TROPICS

Edited by W. BYAM, O.B.E.,
Lieut.-Col., R.A.M.C. (ret.); Lecturer on Tropical Medicine at St. George's Hospital Medical School;
and
R. G. ARCHIBALD, D.S.O., M.D.Edin.,
Director of the Wellcome Tropical Research Labs., Sudan Govt., Gordon College, Khartoum.

Complete in Three Royal 8vo. Volumes, comprising 3,000 pages, with over 1,000 Illus. in the text, and about 100 Plates in colour.

Price £4 4s. net per Volume.

VOL. I. NOW READY.

OXFORD MEDICAL PUBLICATIONS,
THE LANCET Building, 1, Bedford Street, London, W.C.2.

A TEXT-BOOK OF

Experimental Psychology

By CHARLES S. MYERS,
M.A., M.D., Sc.D., F.R.S.,
Director of the Psychological Laboratory, Cambridge.

Second edition. In 2 parts. 13s. 6d. net.

The two parts are also sold separately: PART I, Text-book, 9s. net; PART II, Laboratory Exercises, 6s. net.

"No worker in psychology can afford to dispense with this excellent textbook, while the physician opening it at random will find material to engross him on almost every page."—*Lancet.*

CAMBRIDGE UNIVERSITY PRESS
Fetter Lane, London, E.C.4; C. F. Clay, Manager.

SKIN DISEASES.

By HALDIN DAVIS, M.B.Oxon., F.R.C.S.
Many Illustrations, both Colour and Half-tone.
Second Edition. Now Ready.
Publd. by HENRY FROWDE, 1, Bedford St., W.C. 2.

SECOND EDITION.
Royal 8vo. Pp. x + 718. Price 30s. net, postage 10d.

PSYCHO-ANALYSIS

By ERNEST JONES, M.D., M.R.C.P.Lond.,
President of the British Psycho-Analytical Society.

BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, London, W.C. 2.

Angina Pectoris.

A CURABLE GASTRIC REFLEX DISORDER.

By Walter Verdon, F.R.C.S.

Right Hon. Sir CLIFFORD ALLBUTT, K.C.B.—"*I see much of great interest in your.....work.*"
Sir JAMES MACKENZIE, F.R.S.—"*A storehouse of facts and observations of the greatest value. . . . A classic.*"
MED. TIMES.—"*Wealth of practical detail.*"
BAILLIÈRE, TINDALL & COX. Pp. 414. 18s. 6d.

SECOND EDITION. 20s. net.
BY
HERBERT J. PATERSON,
C.B.E.; M.C., M.B. (Cantab.), F.R.C.S.
THE
SURGERY OF THE STOMACH.
A Hand-book of Diagnosis and Treatment.
"A masterpiece among monographs."—*The Practitioner.*
JAMES NISBET & Co., London, W.

Now Ready. Pp. viii + 381. 28 Plates 12s. 6d. net.
PULMONARY TUBERCULOSIS.
ITS ETIOLOGY AND TREATMENT. By DAVID C. MUTHU, M.D., Med. Supt., Mendip Hills Sanat.
BAILLIÈRE, TINDALL & COX, 8, Henrietta St. W.C.

By A. H. [illegible]BBY,
C.B., C.M.G., M.S.
279 pages. 15 Illustrations. Demy 8vo. 15s. net.

A CONSULTING SURGEON IN THE NEAR EAST

London:
CHRISTOPHERS, 22, Berners Street, W.C. 1.

SECOND EDITION. Cr. 8vo. Pp. xiv + 402.
Price 10s. 6d. net; post 8d.

ADVANCED SUGGESTION:

NEURO-INDUCTION.

By HAYDN BROWN, L.R.C.P., &c., Edin., Fellow of the Royal Society of Medicine.

"Dr. Haydn Brown's volume gives a general account of the good results he has obtained with psychotherapy in all sorts of conditions of disorder and disease, mental and otherwise."—*Brit. Med. Jnl.*

BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, London, W.C. 2.

Cox-Cavendish Announcements in Radiology and Electrotherapy.

The POTTER-BUCKY DIAPHRAGM

The latest apparatus for improving RADIOGRAPHIC TECHNIQUE.

BRITISH MADE.

This remarkable apparatus is indispensable for the production of radiographs showing perfect detail. It is designed to absorb the scattered radiations emerging from the patient, thus giving wonderful definition and detail and completely eliminating that "foggy" appearance and distortion so often met with. This "cleaning up" effect is particularly marked in radiography of the chest, abdomen and pelvis.

PRICE £55

Cheapest and Best

Made to take plates and films, or cassette with screens. Constructed throughout in our factory.

Full particulars forwarded on request. ***ORDERS EXECUTED IN STRICT ROTATION.***

THE "PLUROSTAT"

(REGD. TRADE MARK) **FOR THE SURGEON AND GENERAL PRACTITIONER.** *(REGD. DESIGN)*

This NEW UNIVERSAL APPARATUS provides:—

GALVANIC CURRENT for Ionic Medication, Electrolysis, etc.,
SINUSOIDAL CURRENT,
GALVANO-SINUSOIDAL CURRENT,
FARADIC CURRENT,
GALVANO-FARADIC CURRENT,
CAUTERY,
LIGHT for Cystoscopes, and every type of Surgical Lamp,
MOTOR POWER for driving Pneumo-Massage Pumps, Centrifuges, Surgical Drills, Burrs, Trephines, Vibratory Massage Apparatus, Leduc Commutator, Rhythmic Interrupter, etc.

Specially Designed Dynamo to supply current to Patient Independently of Main Supply Driving Motor.

As supplied in great numbers for use in the Electrical Departments and Operating Theatres of Hospitals, Pension Clinics, &c., throughout the country.

PROMPT DELIVERY.

Manufactured throughout at our own Factory.

This apparatus is fully described and illustrated in the "BOOK OF THE PLUROSTAT," 28 pages, post free on request.

The Cox-Cavendish Electrical Co., Ltd.,

105, GREAT PORTLAND STREET, LONDON, W. 1.

Telephone: LANGHAM 1145 and 1146.

Factory: TWYFORD ABBEY WORKS, HARLESDEN, N.W. 10.

Scottish Branch:
15, Hanover Street, Edinburgh
Telephone: CENTRAL 6882.

Northern Branch:
Danefield, Buttershaw, Bradford
Telephone: LOWMOOR 115 Y.

An Address
ON
THE TREATMENT OF PARALYSIS IN CHILDREN.

DELIVERED TO THE SECTION OF DISEASES OF CHILDREN OF THE ROYAL SOCIETY OF MEDICINE,

BY

SIR ROBERT JONES, K.B.E., C.B., CH.M., F.R.C.S.,
PRESIDENT OF THE SECTION.

A BODY such as this Section of the Royal Society of Medicine is of inestimable value in bringing together the physician and the surgeon in their manifold activities, and I would emphasize again that a specialism should be attained by a process of mental evolution, and be practised only after a thorough grasp of the fundamental principles of medicine and surgery has been won. Even now there should be a closer association between the work of the physician and that of the surgeon; they are not practising two different arts, and in a large number of cases their combined energies should be devoted to a common end.

On a visit recently with Sir Anthony Bowlby to one of the hospitals in the United States we were impressed by the fact that Harvey Cushing and his class went round the orthopaedic wards with Lovett and his class, and a return visit was paid to the neurological wards. Problems of common interest were discussed and valuable suggestions made. It would be to the common good if physician and surgeon in our teaching hospitals, with their students, could meet in common in the wards. The surgeon, if he is receptive, has always something to learn from the physician, and the physician may sometimes glean a stray idea from the surgeon. Take a group of cases with potential deformity, say the osteo-arthritic group. The surgeon with his mind obsessed by deformity is very apt to think that his whole duty is to correct it, and no serious attempt is made to check the infection; while the physician may ignore the sure onset of deformity in his eagerness to discover a microbe. This is all wrong. If we walk round a ward where such cases abound we find ankylosing ankles in full extension, flexed knees and hips, and crooked spines. Yet all these are preventable. The student who becomes the practitioner is encouraged to look upon such results as the inevitable sequence of disease with far-reaching evil effect. A closer affiliation between physician and surgeon would obviate all this; the applied knowledge of each is essential to the scientific conduct of the case. The practitioner in the remote village would then know that such cases have both a medical and a surgical aspect, and, as he has to practise both as a physician and a surgeon, the knowledge would relieve him of serious responsibility. Medical sins of omission and surgical sins of commission would both be prevented by a closer affiliation of these great branches of our profession.

I propose to deal with some points in the treatment of the paralyses in children, affections which require the close association of neurologist and surgeon. Poliomyelitis is the most common of the paralytic affections attacking the child, and yet it is not sufficiently emphasized that this affection may not be accompanied by paralysis. Paralysis is incidental, not essential.

The many and very extensive epidemics that have occurred in America, and their careful tabulation by Lovett and others, confirm the conclusion of observers in other countries that there is considerable variation in the onset, although, generally speaking, it is that of an acute infection. I can recall several instances in which I have failed to obtain any history of an acute beginning. In one remarkable instance three children were affected in one family. In one of the children extensive paralysis followed an acute onset; in another the acute onset was followed by pain, but no evidence could be gathered of even a transient paralysis; in the third child extensive paralysis occurred suddenly, with no febrile symptoms and no complaint of pain. In quite a number of cases hyperaesthesia appears before the paralysis. It is difficult to elicit a reliable history of the sequence of symptoms in young children. We are better able to obtain information from young adults; some of them have noted a numbness preceding the loss of power, while others have complained of a burning sensation in the extremities and sometimes of shooting pains. In one case, following a febrile attack, the right leg was affected and, four months later, the quadriceps of the opposite leg. Such late developments, however, must be very rare.

We are accustomed to look upon the first stage as extending from the onset until all pain has disappeared. If there is no pain, or very transient pain, it is wiser to consider the first or acute stage as lasting six weeks, but so long as pain lasts we must look upon it as indicating active irritation of the cord. I have known the stage of pain to last for nine weeks; in that case, although the paralysis was extensive, it was of a very transient character. Lovett tells us that in America it has proved very necessary that the surgeon should be possessed of the evidence upon which a diagnosis of poliomyelitis has been made. They found it imperative to have recourse to lumbar puncture, because many abortive cases occurred which were potential dangers to the family and State; only in this way could the isolation of the abortive case be secured. It had the further advantage of securing rest in the pre-paralytic stage, and of arousing suspicion whenever a transient weakness was discovered in a muscle or muscle group. We must bear in mind that while lumbar puncture is valuable for diagnostic purposes, it is also a mode of treatment which has proved of benefit in the acute stages of the affection.

The second period usually lasts for two years, and corresponds to the absorptive changes in the cord. During part of this stage the motor area is frustrated in its efforts to send impulses to muscles; in time, however, some of the paths recover and muscular power returns. Even while the power returns, trophic disturbances begin, affecting both circulation and growth, and it is in this period that deformities appear, unless appropriate measures are adopted. The surgeon, unfortunately, too often comes on the scene only in time to correct conditions which should not have arisen, and when preventive measures are too late. The reflex arc being broken, the reflexes in the affected area are diminished or lost. The electrical examination of the paralysed muscles is only of value when the tests are carried out by an expert. If the muscle retains its faradic excitability when tested a few days after the onset of the disease, a good prognosis may be given. If, on the other hand, the muscle has lost its faradic excitability, and the response to interrupted galvanic stimulation is slow (the reaction of degeneration), this is evidence of interruption of the lower motor neuron, and the prognosis is correspondingly more grave. From the electrical examination at this stage no accurate prognosis can be given as to the ultimate fate of the affected muscles. The difficulties of diagnosis during the stage of onset are sometimes complicated by pre-existing conditions, such as shortening from fracture, congenital dislocation of the hip, infantile hemiplegia, and in one very interesting case I remember the spasmodic conditions of the limbs due to spastic paraplegia were considerably modified by a superimposed poliomyelitis.

In the early days of treatment it is usually impossible to state the degree of shortening which will ultimately persist. It is very rare to find a shortening of more than three inches. The shortening is not definitely proportionate to the degree of residual paralysis, but bears a closer relation to trophic changes. In one case there was complete paralysis of the right leg and a mere paresis of the left quadriceps, yet the left leg was an inch shorter than the right. In another instance a paralysis confined to the calf muscles resulted in a limb with two and a half inches of shortening. It is equally difficult to foretell the degree of recovery of function. Although it is unusual, I have seen cases in which a muscle has only begun to improve after three years of complete paralysis. When the stage of onset and tenderness is protracted, recovery of the muscles is usually postponed, but the improvement continues for a longer period. Lovett has pointed out, and I can confirm it from my own observation, that cases which present a fairly complete paralysis below a definite level are unfavourable, and that cases which have a considerable amount of total paralysis persisting after three months will only make a very partial recovery. There are, however, notable exceptions.

TREATMENT.

Intimately connected with the question of prognosis is that of treatment, which very largely influences it. From the onset to the end of the second stage, and even later, we have to avoid meddlesome methods, and to recognize that muscles we are apt to look upon as paralysed may after all be merely weak. I pointed out, many years ago, that a muscle exhibiting the reaction of degeneration is not necessarily outside the pale of hope, and that while we may be certain that if

a muscle reacts to faradism it will recover the converse does not always hold. Prognosis is more hopeful if from the first we visualize the obstacles to recovery and avoid them.

Rest.

The early treatment of poliomyelitis is usually the responsibility of the general practitioner, who has to direct the case on correct principles. During the stage of onset we must trust entirely to rest, and even then protect the muscles which are weak and obstruct the coming of deformity. The head and spinal column should be kept absolutely at rest in obedience to the general law as applied to inflamed structures. Rigid fixation of the head and spine is a relief to pain, but if the pain is slight for physiological reasons rest is imperative. The appliance should be cosy and so constructed that nursing is rendered harmless, and nothing should be allowed to take place which might conceivably frighten the child. Body and mind should be kept at rest. While active mischief is present in the cord electricity and massage should be avoided. It is not physiological to irritate and stimulate peripheral ends of nerves connected with inflamed centres. The practice is irrational, cruel, and reactionary. Applications of heat and cold are equally to be condemned. We are dealing with a damaged cord, which must be zealously guarded from fussy therapy. Deformity must be prevented at this stage as well as at every other, and this can be done without any irritation to the child. We must remember that deformity involves a loss of power both in the contracted and in the overstretched muscle groups. The deformities which we usually have to guard against are: contraction of the feet in plantar flexion, flexion of the hips and knees, adduction of the shoulder, and curvatures of the spine. If the child is on a frame soft pillows can be used to correct other deformities; but again I would repeat that nothing is to be done in any way likely to worry the child. Crying is one of the worst evils to inflict upon a tender head and spine.

Before approaching the second phase of treatment I must beg of you, as I have so often done before, to remember that a muscle which is submitted to stretching will lose its function, and that we must draw a distinction between a muscle paralysed by destruction of its governing cell and a muscle disabled and impotent from overstretching. This was pointed out by Thomas forty years ago. It is the fundamental element in our treatment of the disabled muscle. In poliomyelitis the factors that are at work in abnormally elongating muscles are—unopposed muscular action; the influence of gravity, as in plantar flexion of the ankle; deflection of body weight in walking, such as occurs in the foot when, in paralysis of the tibial group, the patient walks on his inner ankle. I will not spend time in giving concrete examples and proofs; they have on several occasions been supplied in abundance, but, although there is a general agreement with the theory, practice leaves much to be desired. If by stretching a normal muscle for a lengthened period we deprive it of power, how important it becomes that a partially paralysed muscle, struggling for function, should receive a helping hand! It cannot be too strongly stated that a paralysed muscle should be kept relaxed, without a solitary break in continuity, until recovery occurs. This should be done at once, for when the deformities become fixed the contracted muscles become structurally shortened and, in accordance with a well-recognized physiological law, all the tissues on the contracted side participate in the change. From this it follows that, in paralysis of the deltoid, the arm should be kept abducted; in paralysis of the flexors of the arm the elbow should be kept flexed and pronated; when the foot has lost the power of dorsiflexion, it should be maintained in dorsiflexion—and so, in all deformities, the functioning muscles should be stretched and the weak ones relaxed.

The next principle I would emphasize is that as recovery begins to take place the relaxation must be lessened by small degrees, the extent being regulated by the patient's ability to make use of the muscle in the extended range. There is yet another important fact—namely, that if a muscle is overexercised it will begin to lose power. I have met with many instances where a recovering muscle has lost all its power when it has been given its liberty too soon. We must therefore be careful not to overtax a weak muscle. Cases are continually occurring where recovery ceases in a muscle asked to do more work than it is physiologically capable of doing.

In this second stage we are constantly called upon to correct deformity which, as we know, if left may deprive the lengthened muscle of all hope of recovery; but we must also remember that the shortened muscle is also weakened, because its range of movement is necessarily confined to a limited radius. I will not enter into details of the methods employed to correct deformity; it is enough to say that it can be done by a splint and bandage, and that in the lower extremities we secure the assistance of gravity. Excepting in extreme instances the knife is never needed. The correction is called for in the case of the lower extremities in order to enable the patient to stand and walk with or without assistance, and to attain this end without the production of secondary deformities. In the case of the upper extremity, deformities are corrected mainly in order to obtain function.

Massage.

As soon as the patient is made straight, we devote our attention to the development of his muscles. This is a long and arduous task and too often becomes a routine. "Give the child massage" is often the prescription, as though it were a dose of castor oil. Our aim is to develop the weak muscles and not the strong ones, and yet massage and exercise as usually practised bring into play most prominently the muscles which we should desire to neglect. It is the duty of a physician or surgeon to instruct the masseuse as to her line of conduct, and to explain to her what is needed, and why. We then obtain intelligent co-operation. We shall then know that the muscles will not be fatigued, and that while they are massaged they remain in a position of relaxation and that all the movements are of a kind not calculated to strain the weak group. If the extensors of the wrist are weak, the wrist-joint will be kept dorsiflexed and not once allowed to move in the direction of plantar flexion. If the dorsiflexors of the foot are under treatment, the foot should never be plantar-flexed below the right angle; and both in the wrist and foot the fingers and toes should be actively exercised before an attempt is made to move the heavy joints.

Colin Mackenzie, in his suggestive work on the action of muscles, emphasizes the necessity of minimizing strain on weakened muscles during their re-education. A man suffering from a recovering deltoid, who cannot elevate his arm beyond a right angle when he stands erect, and is opposed by gravity, can complete the range of movement if he lies on a flat table covered with chalk in order to avoid friction, and so with the other groups. By this means very early voluntary effort becomes effective. The splints during this period should be so designed that no pressure on muscle can take place, and, where possible, massage should be practised without their removal.

Muscle Re-education.

Muscle training is of extreme value. It is based on the principle of concentrating the patient's attention so that brain cell and muscle will work in accord. Everything should be eliminated which interferes with the untrammelled action of the paralysed muscle, and when the slightest response follows an effort the enthusiastic expert will almost supply the patient with energy to persevere.

We can perhaps best illustrate this in the case of a limb with paralysis of the quadriceps. Very slight voluntary movement should be started early, but that movement should not be allowed to act on the joint, for the muscle is not strong enough to act against any such resistance. The knee, therefore, is kept fixed in full extension in order to rest the quadriceps. The first sign of recovery will be watched for, and the moment a voluntary twitch is observed education is to be commenced. The masseuse teaches the patient to practise drawing up the patella. When this can be done, she is then told to put her finger against the upper border of the patella and to give a little resistance to the action of the muscle. To allow the child to flex her knee at this stage would be to invite calamity. When the muscle has gained considerable strength the rigid splint may be changed for one that allows only a few degrees of flexion, and as soon as the patient has muscular control of the knee within that radius the range of flexion can be increased by degrees. The massage should be gentle in these early stages, for considerable damage is done if rough. All we can expect from it is an improvement in the nutrition of muscle. I could give scores of instances where recovering muscles have weakened by fatigue from immoderate exercise and from energetic massage. Recovery from this is brought about by rest. My experience coincides with that of Lovett, who has drawn attention to the dangers of overexercising a weak but recovering muscle. He instances the gastrocnemius muscle:

"a normal gastrocnemius should be able to raise twice the body weight; if it is reduced to one-quarter of its normal strength by a paralysis it is easy to see that walking is a continued overuse of this muscle. Nowhere have I seen the effects of overfatigue more clearly exemplified than in the observation of this muscle. If the muscle is protected, much walking prevented, and a very high heel put on to throw it out of action, as a rule it is amenable to treatment, and I have seen instances where in a year or so the muscle returned to its full normal strength; but I have never seen a case of any considerable weakening of the gastrocnemius muscle do otherwise than badly when walking was allowed freely and the leg not protected by a high heel." This is all borne out by examples we commonly see where paralytics who are undergoing intensive treatment make no progress until they are laid up by some other affection, and the muscles instead of deteriorating gain considerable power. Experience justifies us in concluding that exercise without weight-bearing should be continued until the muscles have gained considerable strength, and that when the time for walking comes it should be regulated with scientific precision.

Electrical Stimulation.

I have spoken of rest, massage, and muscle re-education, and these are the means which appeal to me as of the greatest value; but electrical stimulation is a legitimate and useful means of giving certain muscles a mild and beneficial exercise, and the object of the treatment is to make the muscles contract. It is harmful as well as useless to immerse the affected limb in a bath and allow the current to pass through the water. If any action results it will be contraction of the normal muscles and stretching of the paralysed ones.

During the convalescent stage until there is recovery of faradic excitability interrupted galvanic stimulation is employed. It should be possible in a majority of cases for a specially trained masseuse, loyal to instructions, to stimulate the paralysed muscle to contract without the spread of the stimulus to the normal ones. Faradic stimulation is of service only with recovering muscles which will again react to this form of stimulus, or for those muscles weakened but not paralysed. Fatigue must not be brought on; the electrically provoked exercise must stop short of this. It should be painless, or practically so, and not cause terror to the child. If it does, it should be discontinued. For reasons that are obvious a paralysed limb should always be kept warm.

Correction of Deformities.

As the object of treatment is to secure for the patient the highest possible degree of function we must prevent or obliterate all deformities. Deformities are primarily due to the contraction of muscles; other preventable factors assist. Although they can be rectified at any stage their persistence through the early months will have inflicted very serious damage to the weak muscle groups. I have seen marked contractions of the hips in five weeks after the onset, and of all deformities, if allowed to become fixed, they are the most difficult to deal with—if we exclude scoliosis—and are a prolific cause of secondary deformities. They occur with greatest certainty where the glutei are weak and the flexors retain some power. They are favoured by sitting and crawling, and are best treated by the use of a double frame, so that the stretching may be continuous. Treatment by posture, such as lying on the face, is less effective, as it is intermittent and violates the fundamental principle we have enunciated in regard to the stretching of muscles. The same criticism applies to scoliosis. There is no position like the recumbent one until the maximum of recovery is assured.

Shoulder contractions are also obstinate, and are due to paralysis of the deltoid and overaction of the pectoralis major and latissimus dorsi; the arm should be abducted from the first, and if adduction has occurred the deformity may be corrected by stretching and an abduction splint applied, as advised by Colin Mackenzie. To see a paralytic child, unprotected, sitting or lying in a heap is a pathetic instance of surgical ignorance or neglect. Deformities, where possible, should be rectified by mild and persuasive means, but there is no excuse in these days which can be accepted to explain either their occurrence or continued existence. Much can be learnt from the gait of paralytics, as so well described by Lovett. When the gluteus maximus is paralysed we find that when weight is borne on the affected side the body is thrown back with a sudden lurch and the patient hurries with the other leg. It is like that of a patient with an amputation of the upper third of the thigh wearing an artificial leg. Paralysis of the adductors does not cause much limp, but it can be detected by asking the patient to put one foot directly in front of the other. With weak adductors this can only be done by swinging the body.

If the hip flexors are involved the patient brings the affected limb in front by a forward twist of that side. In paralysis of the quadriceps one of several methods may be adopted. He may keep the knee from flexing as he walks by pressing the thigh back with one hand, or as the affected limb touches the ground the patient hyperextends the knee to lock the joint; both these practices produce genu recurvatum. Again, he may walk with his leg rotated outwards to avoid the action of gravity; if he has strong hamstrings he can lock the knee without fully extending, simply by bending the whole body forwards.

The gluteus medius, an antagonist to the adductors, draws the thigh outwards when the pelvis is fixed, or abducts the trunk when the thigh is fixed. Its paralysis causes a characteristic gait. When the patient bears weight in walking on the affected side he lurches over to that side in an attempt to balance, and the lameness is often indistinguishable from that caused by marked shortening of the leg. Lovett has shown us that the limp is largely obliterated during the examination by giving the patient a weight of five to fifteen pounds to carry in the hand of the affected side. It changes the centre of gravity and compensates for the weakness of the muscle.

With weak abdominal muscles the patient stands and walks sway-backed with the hip flexed, marked lumbar lordosis, and prominent abdomen. Unilateral paralysis of the abdominal muscles causes the patient to drop the pelvis on the weak side in taking the weight on the good leg. It is similar to the position taken by a patient with congenital dislocation of the hip when standing on the affected leg. I need not describe other gaits, but it will be seen that by observing the patient's walk the more characteristic paralyses may be noted.

In the third or chronic stage, when all the recovery we can expect has occurred, the surgeon's task is one of restoring his patient to usefulness. The correction of deformity is absolutely essential, for no muscle can be restored unless this is done, and from the mechanical side it is impossible to walk with joints flexed or hyperextended. Of the methods by which we correct various deformities I need only say they are simple. That our present methods will be improved is a commonplace, but there is no reason even now that paralysis should be followed by deformity, except scoliosis, and there is no reason why, if deformity has been allowed to appear, it should not be corrected by one of many means at our disposal.

Splints are used for three objects—the prevention of deformity, the correction of deformity, and to assist the function of the upper arm or locomotion in the lower limb. They should be simple in design and made of light material only just sufficiently strong to effect their task. They must be looked upon as the lesser evils, and when they can be safely discarded they should. In the lower limb apparatus is indicated if the patient cannot walk so well without such aid, or if he can only walk or stand in a position of deformity. When a splint is applied, we must carefully note whether its use prevents or induces secondary deformities. But granted that apparatus in itself is undesirable, the conditions which it is put on to prevent are still more undesirable. These are inability to walk, the acquirement of malposition and permanent deformity, and the stretching of paralysed muscles. We must remember that deformity starts as a postural malposition, becomes fixed by adaptive changes in the soft parts, and progresses to permanent bony deformity in accordance with Wolff's law. These deformities are of every type—dislocation of the femur, knock-knee, genu recurvatum, flexed joints, subluxation of the tibia, contracted and dropping of the shoulder, and scoliosis.

When we come to a general consideration of operations we find they are of two types: one to stabilize a flail joint by operation on the skeleton, the other to restore muscular balance. Our views on the value of arthrodesis have been modified of late years as the result of the introduction of other methods. In the knee-joint it is never necessary in children, and but very rarely in adults. The inconvenience of a stiff knee is a serious one, and the problem is better dealt with by the application of a splint which will permit of flexion. The same may be said of the hip. Arthrodesis of the ankle yields at best an imperfect functional result, and although, perhaps, at times desirable in adults, it is contra-

indicated in young children, and less desirable in older children, than other methods at our command. Arthrodesis of the astragalo-calcanean joint, so performed as to correct any lateral deviation in the feet, is proving of increasing value, for excessive lateral mobility without stability is difficult of control by mechanical means. Arthrodesis of the shoulder is of considerable advantage when the deltoid is irrecoverable and the function of the rest of the arm is good. Before it is performed the muscles of the shoulder girdle must be working, as the object of the operation is to fix the head of the humerus into the glenoid at an appropriate angle so that the arm may be moved by the scapular muscles. In children over 10 the scapular movements become very free as they grow up, and after an arthrodesis the arm can be placed to the back of the neck, and into the trouser pocket. This operation should be but rarely performed in the adult, and its limitations should always be fully described to the patient.

In a technically successful operation in an adult the patient was dissatisfied with the result because previously she could do her hair and fasten the back of her dress by placing the paralysed arm in position with the other, whereas after the arthrodesis the inability to mobilize the scapula sufficiently in adult life prevented the extremes of motion required in these two movements. As a preliminary to arthrodesis of the shoulder intensive exercises for the scapular muscles are needed, and unless the patient can shrug the shoulder with considerable power arthrodesis is contraindicated.

If an arthrodesis is performed on the adult the arm should be fixed in abduction at a lesser angle than in the case of a child. In the child the scapular movement can be considerably increased over the normal range during the years of growth. In the adult there is a danger, if the abduction is extreme, that the arm cannot be brought to the side. This is a very serious functional result.

Tendon transplantation is beginning to appear in its true perspective, and the complicated operations in vogue some years back are no longer performed. Its object is to improve or to restore muscular balance, and it is to be condemned unless it is performed with a reasonable chance of improving function. The transplanted muscle should become a true substitute for the muscle which is paralysed. It may be performed in order to prevent or correct deformity, and the recent tendency of surgical practice is to employ it in conjunction with operations designed to improve stability. Its task in that case is not so responsible as when the transplanted tendon is called upon to do the whole of the work itself. Tendon transplantation is a procedure which calls for sound judgement and irreproachable technique.

Every case represents a separate anatomical problem, and it is not indicated unless there are normal tendons to transplant. The question of operation does not arise when the muscles are all partially paralysed. If nothing has been done in order to relieve the paralysed muscles from tension an operation is not justified until relaxation has been tried, and it is fundamental that all deformity should be fully corrected before a transplantation is done. Naughton Dunn of Birmingham has lately made a distinct advance in the treatment of paralysed feet which require apparatus, by shortening and stabilizing the foot. The operation consists of arthrodesis of the astragalo-calcanean joint and the removal of various portions of bone from the tarsus, retaining the function of the ankle-joint and fortifying plantar flexion by transplantation of the muscles which pass to the sole into the tendo Achillis. I examined some fifty cases upon whom this operation had been performed, and the results were excellent, most of the patients walking without apparatus.

Associated with the success of tendon transplantation is the recognition of those principles which bear upon the relaxation of muscle and fatigue. Any attempt to overwork a transplanted tendon results in weakening it, and until it gains strength it should be treated as if it were partially paralysed. Massage and re-education should be conducted in the absence of weight-bearing.

With improved technique the operation of tendon fixation has gained in surgical esteem, and has made much headway since Tilanus introduced it, much of the improvement being based on the experimental work of Gallie. It consists of the utilization of paralysed tendons as ligaments. The success depends largely upon the anchorage being made very near the articular ends of bone on both sides of the joint, so that a very short piece of tendon is under strain. For instance, in paralytic foot-drop, the tendon of the paralysed calf muscles is divided, and the lower end split longitudinally, one half being brought through the tibia and the other through the fibula, with the foot kept at a right angle. In this way we form a very firm ligament, which prevents dorsiflexion of the foot. These fixation operations have supplanted the employment of silk ligaments, but the practical point wants emphasizing—that it is essential the tendons should be fixed just above and below the joint, in order to minimize the danger of stretching. More lately free fascial transplants are being used to form ligaments, but our experience is not sufficient to allow a considered judgement.

The tendency of modern surgery is to stabilize the ankle, and the surgeon calls to his aid a variety of methods. If he deals with a calcaneo-cavus where only the flexors of the toes are working, and perhaps the peronei, he first performs arthrodesis of the calcaneo-astragaloid joint to give lateral stability, and then of the front of the foot, shortening it at the same time. He does not touch the ankle-joint. The peronei and flexors of the toes are passed through the back of the os calcis. If the muscles are weak and will not bear the full strain of body weight, the lower portion of the impotent tendo Achillis is transformed into a strong ligament. In short, he employs arthrodesis to shorten the foot so that leverage is rendered less harmful, and to prevent lateral instability; he employs tendon transplantation to supplant a paralysed calf muscle, and he limits the movement of the ankle by a tendon fixation in order that the transplanted tendons may be saved from fatigue. This is excellent team work, in which all the structures of the foot participate. For pronounced knock-knee, so often found in neglected paralysis, subcutaneous osteotomy is sufficient.

The deformity produced by shortening can now be overcome by an operation devised to lengthen the femur, just in the same way as we lengthen a tendon. If the shortening is the result of a paralytic dislocation the displacement can be reduced and the capsule plicated. In fact, there is no deformity to be met with that should baffle surgical art. Operations, however, are but *incidents* in the treatment of paralysis, and it is upon recognition of sound principles in the after-care that we depend for the restoration of function.

Nerve transplantation, which at one time seemed so reasonable, is no longer practised, and our observations during the war upon nerve transplantation in paralysis of the peripheral nerves confirm us in discouraging it in infantile paralysis. The direct neurolization of paralysed muscle is only in its experimental stage, and the result will be followed with great interest and considerable misgiving.

My apology for bringing before so learned an audience these elementary but practical principles is that I fear that, even in high places, men are content to give them a mere academic homage.

The Milroy Lectures

ON THE

INFLUENCE OF INDUSTRIAL EMPLOYMENT UPON GENERAL HEALTH.

DELIVERED BEFORE THE ROYAL COLLEGE OF PHYSICIANS OF LONDON ON MARCH 9TH, 14TH, AND 16TH, 1922,

BY

MAJOR GREENWOOD,

READER IN MEDICAL STATISTICS IN THE UNIVERSITY OF LONDON; FORMERLY STATISTICIAN TO THE LISTER INSTITUTE.

LECTURE II.

I HAVE pointed out the difference between the courses of the death rates at ages in England and Sweden through the last sixty years, how greatly our mortality has improved both absolutely and relatively to that of Sweden in the younger age groups, how unfavourable is the comparison at later ages. Our later adult mortality was indeed still deteriorating relatively to that of Sweden as recently as 1890, and a subsequent improvement has only brought it within 42 per cent. of the Swedish rate. Nor if we compare typical districts of England can it be said that the regions with a high initial rate, such as Lancashire, have improved much faster than those, such as the South-Western Group of Registration Counties, with an initially low rate. If the comparison be extended to other countries the same conclusion is reached, that expressed by Dr. Stevenson in the following words:

"Considering the whole country as a single area of urban type in comparison with other countries the same feature is observed. Our position is relatively very favourable in early adult life, and

TABLE I.—*Death Rates per 1,000 Living from Pulmonary Tuberculosis in Sweden.*

Age.	1911.		1912.		1913.		1914.		1915.		England and Wales, 1901–10.		
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.	Age.	Males.	Females.
0–5	0.416	0.371	0.375	0 368	0.271	0.347	0 391	0.354	0.429	0 392		0.351	0 304
5–10	0.186	0.370	0.219	0.232	0 190	0.277	0.224	0.336	0.187	0.286		0.137	0.194
10–15	0.310	0.733	0.303	0.848	0.257	0.725	0.328	0.867	0.421	0.861		0.171	0.396
15–20	1.578	2 153	1.727	2.236	1.546	2.057	1.601	2.329	1,690	2,483		0.756	0.988
20–30	2.681	2.938	2 623	3.041	2,632	2.925	2.725	2 987	2.972	3.158	20–25	1.521	1.235
30–40	2.146	2.280	2.204	2 360	1.893	2.410	2.153	2.558	2 085	2.838	25–35	1.965	1.475
40–50	1.741	2.084	2.125	2.034	1.700	2 002	1.748	1.953	1.780	2.219	35–45	2.446	1.551
50–60	1.736	1.551	2.069	1.729	1.773	1.599	1.871	1 641	1.965	1.576	45–55	2.753	1.310
60–70	1 831	1.571	1.890	1.609	1.935	1.415	1.977	1.432	2 001	1.588	55–65	2.379	1.047
70–	1.423	1.049	1.170	1.066	1.133	1.070	1.155	0.963	1.068	1.036	65–75	1.521	0.756
											75	0.567	0.357

very unfavourable when the middle of life is past, and particularly at 45–65." (Supplement to Seventy-fifth Annual Report of the Registrar-General, Pt. III, p. xxxiii.)

Bearing in mind the actual stages of economic development of England and Sweden, it may be said that there is some analogy between the position of Sweden now and that of England fifty years ago. Most of Sweden's economic development has occurred since 1870. In that year only 20 per cent. of her population depended upon industrial pursuits; this proportion had reached 45 per cent. in 1910. Consequently the very high rates of adolescent mortality in Sweden are perhaps correlative with the changes of environment and of survival values which an economic revolution imposes. Such is indeed the opinion of the most competent Swedish writers. The proximate cause of the excessive Swedish mortality is pulmonary tuberculosis (see Table I). At the beginning of the nineteenth century (see Sundbärg, II) phthisis was of the "old age" type, and its frequency in the middle of the century was either stationary or increasing (Runborg and Sundbärg). Sundbärg thought that the responsible factor was industrialization. Of the increasing mortality at ages 15 to 20 he wrote:

"The cause of this difference between earlier and more recent times seems to us to lie in the fact that formerly the adolescent boy and girl remained *at home* for a longer time. Nowadays one goes more frequently and at an earlier age to the city or the factory. The new conditions of existence bring in many cases increased dangers to health and life—dangers which, especially in the case of women, often lead to tuberculosis" (Sundbärg, I, 204).

Widell has recently (see *Dödlighets och Lifsländgdstabeller för Åren, 1816–1910*, p. 13, and *Dödlighets och Lifslängdstabeller för Årtiondet, 1901–10*, p. 19) affirmed this conclusion.

But there are two important distinctions between the circumstances of England a generation ago and of Sweden now. The first is that Sweden has been an emigrating country—she has lost on balance 843,281 persons in the last fifty years; the second is that Swedish late adult mortality is less than ours is now, and, *a fortiori*, less than ours was a generation ago. Both Sundbärg and Widell think that the decline of spirit drinking has been an important cause of the decreasing mortality at later adult ages. The consumption of spirits reached a maximum in 1871–75, and declined until 1909, since when it has been almost stationary, with, if anything, a slight upward tendency. The cause of the decline seems to be a matter of controversy (see *Sweden*, vol. i, p. 743).

Of the effects of emigration upon the rates of mortality of the home-keeping population I shall not speak in these lectures; they are too complex to be fitly discussed incidentally. The same must be said of a different form of selection—that imposed by the operation of mortality itself. Upon neither subject do my inquiries throw light, yet both must be kept in mind, and I mention them here to warn you against too absolute inferences from the contrasting series of mortality rates which I have examined.

INFLUENCE OF MIGRATION.

But although I am not prepared to discuss the wider aspects of migration, I do desire to examine in some detail one part of a subject to which Dr. Hamer has devoted close attention (see in particular Hamer, 1912, and Hamer, 1921), because its importance is suggested by the quotation I have just made from Sundbärg.

It is difficult to summarize a connected argument in a few words, but I think the gist of Dr. Hamer's contentions is as follows. So far as concerns the influence of emigration in the popular sense of the term—that is, migration from one country to another—Dr. Hamer thinks that those European countries in which economic prosperity has advanced but which have lost population by emigration and have also experienced a decline in the death rate from phthisis, have parted with a large proportion of their weaker citizens, and he shows that the decline in the phthisis rate has been correlated with an outward movement of population in search of health to Australia, America, and elsewhere. On the other hand, in some countries—notably Ireland, where domestic, social, and economic conditions have been bad—emigration has removed a larger proportion of the healthy young adults, and the death rate from phthisis amongst home keepers has either remained stationary or declined but little. This branch of the subject I shall not discuss, but turn at once to the problematical effect of internal migration. Dr. Hamer has shown (making skilful use of the late Sir George Buchanan's report upon phthisis in Kent, Surrey, and Sussex) that rural districts especially ravaged by phthisis are precisely those which a study of age distribution and of other local circumstances proves to have suffered a heavy loss by townward migration. He has also pointed out the favourable rates of mortality experienced by the urban districts as a whole in comparison with country districts at adolescent ages. Hence he attaches much importance to the lure of the towns for the young, vigorous, and ambitious adolescents. But, it may be said, this goes no way to account for the very heavy excess mortality at ages of maturity in towns. Dr. Hamer, however, remarks that there is a townward trend of immigration at later ages of life, but the quality of the immigrants is different. In adolescence and young manhood it is a migration of the vigorous and hopeful; at later ages it tends to be a migration of those broken in the struggle for life, seeking, not perhaps with much hope, what has hitherto escaped them. The immigration of the young and healthy lowers, the immigration of the middle-aged and unhealthy increases, the urban death rate.

I am not quite sure whether Dr. Hamer is prepared to press his theory of the importance of migration as a factor of mortality beyond the point just reached, so that any discredit belonging to the very speculative extension I am about to make belongs exclusively to me, while, should it be found worthy of consideration, the credit is entirely Dr. Hamer's.

It is possible that the change of environment from town to country may have an extremely unfavourable effect upon the immigrants, the supposition invoked by Sundbärg to explain the Swedish experience at ages 15 to 20. Before theorizing about this we may inquire whether the *scale* of internal migration is large enough to make any supposed effect upon the health of migrants a substantial factor of mortality.

The report of the Census of 1911 (General Report, Cd. 8491 of 1917, pp. 203 et seq.) contains an experimental tabulation of the age distribution of immigrants in certain large towns and boroughs. The age group of greatest immigration proves to be 25 to 35, in which decennium the proportion is of the order of

20 per cent. of the enumerated urban population in that age group. In the districts examined it was as high as 22.4 per cent. in the industrial borough of Swindon, 19.4 in Bradford and Burton-on-Trent, 18.9 in the county of London, and only so low as 16.4 in the non-industrial borough of Hastings. If we take 20 per cent., as found in this experimental tabulation, to be a fair characterization of industrial towns as a whole, is there a sufficient supply of country-born persons to furnish the immigrants, or must they be no more than transfers from one town to another?

A precise answer cannot be made to this question, but the difference between actual increase and natural increase of rural districts is very large. Thus, the increase of the *de facto* populations of the registration counties of Huntingdon, Bedford, and Shropshire between 1901 and 1911 was 31,506, the excess of annual births over annual deaths 57,221, leaving an outward balance of 25,715. Numerous examples of urban trends are to be found in Mr. T. A. Welton's book. One cannot doubt that in most manufacturing towns the numbers of country born and bred immigrants are very large, so that Dr. Hamer is almost certainly correct in supposing there to be ample material for the revelation of effects.

In the brief discussion I devoted to the topic in my paper on tuberculosis (Greenwood, 1920) I tacitly and too lightly assumed that the supposedly healthy and ambitious immigrants from the country died in the towns at a lower rate than the town-born coevals and so depressed the average mortality at adolescent ages. I suggest that the very reverse of this may be the truth. A considerable literature has arisen of recent years around the question of bringing "unsalted" populations into contact with urban civilization (Colonel Bushnell's monograph is an admirable introduction to the subject); perhaps what happens to an extreme degree when Dryden's noble savage becomes a townsman happens to a less degree when Corydon repairs to the tenement, the picture palace, and the factory. Adolescent migration perhaps increases mortality in *both* populations—rural mortality by the withdrawal of those best fitted to survive under the rural environment, urban mortality by the introduction of those ill adapted to survive under urban conditions. I shall show that the mortality at ages 25 to 35 of bootmakers in Leicestershire and Northamptonshire is much greater than that of the north-western cotton operatives, in particular the mortality from phthisis. The statistically rural population of these counties lives under conditions much more closely approximating to what the Londoner thinks of as "country" than does the rural population of Lancashire and Cheshire. But this is a faint argument, and until by such an inquiry as that of Dr. Perry in America we can gather more knowledge of the provenance of factory workers the subject must remain obscure. In any case I do not suggest that migration is all-important. Thus the rate of mortality of cotton operatives passes above that of the Leicestershire and Northants bootmakers at 45, and there can be little probability that the townward movement of failures at ages over 45 has a substantial effect upon the mortality rates of a highly skilled industry such as the cotton manufacture. I have, however, some other relevant facts.

Dr. Miyagima has been kind enough to give me some suggestive particulars respecting mortality in Japan. In that empire mortality from tuberculosis has tended to increase, and in 1901–05 was 50 per cent. higher than in 1886–90. According to the statistics of 1908–12 the excess over English rates is especially noteworthy between the ages of 20 and 30; at 25 the mortality in Japan is more than twice that of England and Wales. According some investigations of Dr. I. Ishiwara, the rate of mortality upon girls employed in cotton mills is especially severe. Annually not less than 210,000 girls are invited from the country districts into the mills, and the annual rate of discharge from ill health is 80,000—that is, more than a third of the *numbers* recruited (not of course the same *individuals*). Of the 80,000 discharges, 6,000 are said to be due to tuberculosis, and 70 per cent. of all deaths amongst those discharged are due to tuberculosis. The Government has been led to take special action to deal with the sanitary condition of the factories.

These results are consistent with the hypothesis I have suggested, but naturally a foreigner ignorant of the language and customs of the country is not in a position to make full use of the statistics. The apparent partial immunity of Jews to phthisis (Fishberg) is also a relevant circumstance.

So I must leave this important question with no more than a speculative answer. Yet enough has been shown to justify a closer research. Notwithstanding the bureaucratic interference with the lives of citizens which our newspapers bewail, there is a suprisingly large number of quite simple but important facts which we do *not* record.

POVERTY.

Sundbärg's remarks upon mortality in Sweden invited this not, I hope, unseasonable digression. I now return to more obvious subjects of inquiry. A very large proportion of townsmen and women are desperately poor, and the *hygienic* evils of poverty, the radii of its vicious circles (well described in Dr. Hurry's recent book), smaller in industrial towns than in the country. I will not overstate the case; the eclogues, whether of Virgil or Pope, are not a reliable guide to life even in the sheep-raising districts. Many agricultural labourers are wretchedly housed and miserably poor. But the etiological importance of unsuitable housing is so largely a function of density, of mere aggregation, that the hygienic evils of tenement houses which Dr. Wanklyn described in 1913 as constituting a "gigantic tax on the public health," or of the back-to-back houses which Dr. Robertson so recently stigmatized, are essentially town evils. Bad housing, however, is not the only consequence of poverty: low real wages mean the deprivation of other things besides house-room. The housing conditions of a town are not absolute measures of the economic prosperity of its inhabitants.

The question, then, may be asked whether mortality can be adequately expressed as a function of the two variables—housing and real income; if so we need seek no farther. But that the general etiology of the death rate in industrial towns cannot be fully expressed in terms of these two variables is suggested by the researches of Professor A. L. Bowley and Professor Burnett-Hurst. Their inquiry was no doubt prompted by the well-known book of Mr. Rowntree on the industrial conditions of York, but it followed a different plan.

No study on the scale of Mr. Rowntree's, *a fortiori* none such as the late Charles Booth's investigation, can be carried out save at enormous expense of time and money. The method of exhaustive enumeration must be reserved for such relatively simple particulars as are ascertained by a census; in fact, some statisticians hold that the census authorities already ask too much. But if we cannot measure the "universe" we can at least measure a sample of it, and, in a majority of cases, the sample will tell us all we need to know. The theory of the method is expounded in all text-books of statistics, and its practical application is subject to various limitations, but none of these are of much importance in the particular circumstances of the inquiry I am about to describe.

A Sampling Inquiry.

Professors Bowley and Burnett-Hurst inquired into housing accommodation and economic circumstances in each of the four county boroughs of Reading, Bolton, Warrington, and Northampton (they also investigated the urban district of Stanley, but this district is not comparable with the others from the present point of view). In assessing housing accommodation the census standard was modified. "An adult (including boys over 18 years and girls over 16 years) is counted as one, other boys and girls over 14 as 3/4, children from 5 to 14 as 1/2, and children under 5 as 1/4. The household is then reckoned as containing so many equivalent adults. It is then found on examination that five equivalent adults can be accommodated in a five-roomed house, allowing 500 cubic feet per adult, with a little give and take; and one person or less per room on this basis may be regarded as a reasonable standard of sufficiency" (Bowley, p. 677).

In his work on York Mr. Rowntree adopted a minimum standard of diet and minimum requirements for fuel, clothing, and house rent. The three latter depend on local conditions, the former on physiological evidence. Actually the diets quoted in Mr. Rowntree's book as obtained by his poorest *observed* class yielded about 2,600 calories per "man" (Greenwood and Thompson), a provision which would now cost at least three times the sum allowed in Mr. Rowntree's scheme—namely, 3s. per week; the *theoretical* standard was 3,500 calories. Professors Bowley and Burnett-Hurst modified Mr. Rowntree's theoretical food standard by assuming the purchase of two pounds of meat weekly, and this, allowing also for rise of prices between 1899 and 1913, brought the estimated per caput expenditure for an adult to 4s. 6d. weekly—rather less than half of what it would cost now.

"In making comparisons with the standard, it is to be observed that nothing is allowed for insurance (other than State), pocket money, tram fares, beer, betting, newspapers, or any of the other ordinary objects of expenditure other than necessaries. On the other hand, we do not reckon profit from allotments (which are numerous in Reading and can provide perhaps a weekly shillingsworth of potatoes, beans, etc., together with less nourishing vegetables), and have, no doubt, omitted small earnings of the school children and wives" (Bowley, p. 685).

The authors, having made the necessary calculations, determined the percentages of working-class families below the poverty standard as just defined; these, and the percentages of overcrowded families computed by their method (owing to certain special difficulties—see Bowley and Burnett-

TABLE II.—*The Relation of Working-Class Households to New Standard of Poverty* (op. cit., p. 239).

Percentages of all Working-Class Households.

	Bolton.	Northampton.	Warrington.	Reading.
Above line.				
40s. or more	11	14½	9	1
30s. to 40s.	10	10	6	3
20s. to 30s.	17	22	13	6
10s. to 20s.	27	30	24	20
0s. to 10s.	20	12½	31	44
Unknown	7	3	4	3
Total above	92	92	87	77
Below line.				
Unknown	1	1	2	1
0s. to 10s.	7	7	11	18
10s. or more	0	0	0	4
Total below	8	8	13	23

TABLE III.—*Number of Overcrowded Houses* (Bowley and Burnett-Hurst, op. cit., p. 21).

No. of Rooms:	1	2	3	4	5	6	7	8	Total Overcrowded.	Total No. of Working-Class Homes.	Percentage Overcrowded.
Northampton	0	0	2	13	14	29	2	0	60	693	8.7
Warrington ...	0	3	14	67	22	18	1	1	126	640	19.7
Reading ...	1	0	6	27	48	2	0	0	84	622	13.5

Hurst, op. cit., p. 225–6—this overcrowding index could not be computed from the Bolton data; by the Census test, however, Bolton was better than Warrington, worse than Reading, and much worse than Northampton) are shown in Tables II and III. The death rates at ages 25 to 45 and 45 to 65, computed from the vital statistics of 1911, 1912, and 1913, are shown in Table IV, and as percentages of the rates in Reading in Table V. If we take the percentage of working-class

TABLE IV.—*Death Rates from All Causes per 1,000 Persons (1911–13).*

	Ages:	0–5.	5–15.	15–25.	25–45.	45–65.
Bolton.	Males	47.7	3.2	3.7	7.0	27.7
	Females	41.8	3.0	3.1	5.6	21.0
Northampton.	Males	36.0	2.4	4.3	5.6	18.0
	Females	30.9	2.6	3.8	4.7	15.1
Reading.	Males	26.8	2.2	3.0	5.5	16.8
	Females	23.5	2.0	2.5	4.5	12.2
Warrington.	Males	43.4	3.8	3.5	7.5	25.4
	Females	44.1	4.0	3.0	5.9	21.0

TABLE V.—*Mortality Rates from All Causes Expressed in Terms of Reading 1911–13.*

	Ages:	0–5.	5–15.	15–25.	25–45.	45–65.
Reading.	Male	100	100	100	100	100
	Female	100	100	100	100	100
Northampton.	Male	134	109	143	102	107
	Female	131	130	152	104	124
Bolton.	Male	178	145	123	127	165
	Female	178	150	124	124	172
Warrington.	Male	181	173	117	136	151
	Female	188	200	120	131	172

families below the standard as an average measure of poverty in the economic sense, we see that there is no close relation between mortality and real wages in these towns. Reading, which is by this test far the most poverty-stricken of the towns, has the least mortality at every age. On the other hand, the two Lancashire towns which (except in the age group 15 to 25) have the worst mortalities have also the most overcrowded dwellings. But the housing conditions of Northampton are better than those of Reading, yet only at ages 25 to 45 (of course, a very important exception) are the Reading and Northampton mortalities upon a par.

It is sufficiently well known that the industries of these towns are widely different. In Reading the principal employer of industrial labour is a great biscuit firm upon which a fifth to a quarter of the working class directly depend (Bowley and Burnett-Hurst, op. cit., p. 160); this branch of manufacture does not need a large *proportion* of skilled industrial workers. The staple industry of Northampton is the manufacture of boots and shoes, which, with ancillary processes, employs 42 per cent. of occupied males and 43 per cent. of occupied females (after excluding professional occupations, Government employees, and soldiers). Warrington contains some of the largest ironworks in the country, and iron work is by far the largest single industry, but there are numerous other branches of manufacture. Bolton is one of the great textile towns. There is, then, no homogeneity between any two of the towns in respect of industrial processes, but Bolton and Northampton probably employ a larger percentage of skilled industrial workers than the other two cities (in the iron trade alongside of the skilled men there work many labourers on small wages; when the inquiry was carried out many of the latter earned 20s. to 24s. per week of fifty-three hours).

Can we say that there are any obvious conditions common to the highly skilled Northampton population and the lowly skilled Reading population, on the one hand, and not characterizing the highly skilled Bolton and the moderately highly skilled Warrington population on the other? There are some noticed by our authors.

"Northampton," they remark, "for a manufacturing town is remarkably clean; the boot and shoe factories do not require tall chimneys pouring out dense volumes of smoke, and the number of factories from which pollution takes place is very small. Warrington, on the other hand, is at times 'one mass of smoke'" (op. cit., p. 93).

Bolton, although less smoky than Warrington, is nearer to Warrington in this respect than to Reading or Northampton. In Northampton and Reading Professors Bowley and Burnett-Hurst remark upon the plentiful provision of allotments (op. cit., p. 81; Bowley, p. 685). Perhaps we have here a distinction of some importance; I do not mean that the contributions to family supplies derived from allotments—after all only a minority of the working population can cultivate gardens even in Reading—invalidate the authors' economic classifications, but that the general conditions which render gardening possible at all for the working classes may be significant of much. That treeless desert which saddens the traveller by the North-Western Railway, and inspired so much excellent mid-Victorian prose, is not, perhaps, only an aesthetic blemish. Socrates' remark, "Now shall I go on and mention to you also windless air, calm sea, and all that sort of thing, and say that stillness causes decay and destruction and the opposite brings preservation?" (*Theaetetus*, IX), has found a brilliant exponent in Dr. Leonard Hill, who has displayed a factor of mortality we cannot neglect.

I do *not* mean that the Lancashire towns are surrounded by a windless air; I only suggest that the squalid monotony which seems to be the external characteristic of some of our north-western manufacturing towns may promote decay and destruction. This is certainly not the whole explanation. If one considers the details of the death rates, it will be found that the greatest discrepancy between Northampton and Reading on the one hand, and Bolton and Warrington on the other, is under the articles of deaths from pneumonia. At 45 to 65 the Bolton and Warrington rates per 1,000 living were 2.1 and 2.8 on males, 1.1 and 1.9 on females; the Northampton and Reading rates were 0.9 and 0.8 on males, 0.3 and 0.5 on females. But Bolton and Warrington are in the north-western area, while Northampton and Reading are in the south-midland district.

It is notorious that the rate of mortality from pneumonia is higher in the north than in the south of England; that of rural districts in the north is higher than the urban district rate in the south. What portion, then, of the excess mortality from these causes should be debited to climatological factors?

The obvious test is to compare urban with rural mortality in the north-west, but unfortunately the industrialization of Lancashire is so great that the districts which are more than nominally rural contain a very small population. An

unsatisfactory test, but the best available, is to make use of the decennial returns of registration counties.

A comparison extended over a whole decennium is affected by the fact that prior to 1911 the death rates were not corrected for institutions. However, the accompanying table (VI), based on the decennium 1901–10 and comparing

TABLE VI.—*Rates of Mortality from Certain Causes 1901–10.*

	Ages 45–55.		Ages 55–65.	
	Pneumonia.	Bronchitis.	Pneumonia.	Bronchitis.
England and Wales:				
Male	1.53	0.73	2.49	2 66
Female	0.75	0.62	1.44	2.29
Lancashire:				
Male	2 45	1.43	3.85	5.09
Female	1.20	1.33	2 27	4.60
Northants:				
Male	0.85	0 37	1 29	1.31
Female	0.34	0.28	0.69	1.46
Cumberland:				
Male	1 94	0.44	2.83	1.93
Female	0.91	0.37	1.60	1.73
Westmorland:				
Male	0 91	0 19	1 76	0.95
Female	0.56	0.29	0.89	0.53

England and Wales, Lancashire, Northants, Cumberland, and Westmorland, is instructive. If we assume that the whole of the excess mortality in Cumberland above the all-England rate is due to climatological factors and ignore the rates of sparsely populated Westmorland entirely, we see that Lancastrian males die of pneumonia in the age group 45 to 55 26 per cent. faster than the males of Cumberland and 36 per cent. faster in the next age group. They die more than three times as fast as the Cumberland males of bronchitis at 45 to 55 and more than two and a half times as fast in the age group 55 to 65.

Speaking of pneumonia in 1912, Dr. Stevenson remarked:

"The range of mortality is extreme, being almost four times as great for males in county boroughs of the North as for females in the rural districts of the South, and three times as great when males alone are compared. Even when comparison is restricted to the same class of area in each case the mortality of the North is in no instance very much less than twice that of the South. No doubt this depends to some extent upon industrial conditions, but these can scarcely explain the great difference between the North and the Midlands. Evidently pneumonia is to a large extent a preventable disease, and the North of England has still much to learn with regard to its prevention" (75th Annual Report of the Registrar-General, Cd. 7028 of 1914, p. xciv).

Time does not permit of other detailed comparisons, but the course of phthisis mortality is interesting. At 15 to 25, Northamptom is the worst of the towns (2.5 per 1,000, males, 1.8 per 1000, females), and, excepting women in Warrington, there is nothing to choose between Reading and the northern towns (Reading 0.9 and 0.9, Warrington 1.0 and 1.5, Bolton 0.8 and 0.9). In the next age group, Warrington is worse, but not significantly worse than Northampton. At 45 to 65 Warrington and Bolton differ considerably from the other two towns (Warrington 3.9 and 1.7, Bolton 2.8 and 0.9, Northampton 2.1 and 0.6, Reading 1.5 and 0.9).

This comparison, while sufficient to make it probable that variations of real wages do not account fully for great discrepancies of mortality—thus refuting the newspaper contention that if we only abstain from national and local taxation for medical and hygienic "fads" all would be well—certainly does not unerringly reveal some *one* industrial factor in the northern towns which destroys life. Yet these figures do bring to light an important industrial correlation. In the year 1913 Northampton experienced the highest death rate at ages 20 to 25 (males) of any county borough in England and Wales, and at 15 to 25 the death rates for both sexes were much higher than in the other towns of our series. Turning to the causes of deaths, it appears that the phthisis mortality was very high. We certainly cannot explain it by the generally unfavourable sanitary conditions of the town; we have seen that at later ages Northampton stands better than Warrington or Bolton. We may of course say that the low Northampton mortality at 25 to 45 is partly owing to the high and selective mortality at 15 to 25, but it remains to consider what these influences are which make for so high a mortality at the earlier age. The mortality of boot and shoe manufacturers from phthisis is very great, disproportionately great in comparison with their mortality from all causes. Using the comparative mortality figures of the Registrar-General (1910–12), shoemakers are found to have had a mortality from all causes 88 per cent. greater than that of the clergy; their mortality from phthisis exceeded that of the clergy by no less than 356 per cent.

Dr. Jacques Bertillon summarizes an analysis of thirteen set of tables in the following words:

"The results of these different tables are sufficiently concordant except the French table, the mortality is average (rather slightly less than average at all ages in the four English tables, the Swiss table, and the Parisian table for 1890–99). It is slightly above the average in the two Scottish tables, the Paris 1885–89 table, and that of Leipzig. It is very sensibly above the average (especially below 35) in the French table. All the tables agree in showing that phthisis is frequent at all ages. Other diseases of the respiratory system are, on the contrary, rare" (p. 171).

The occupational incidence of disease I propose to examine in the next lecture; I mention the case of shoemakers here, since it arises in connexion with our study of the four towns, as perhaps the best instance they afford of an industrial correlation not associated with specially low wages or bad housing.

I have dwelt upon the vital statistics of these four towns because for them alone we have contemporaneous measurements of economic status, and only when such are available over a much wider area can we hope to know the real mass etiology of death rates. The field covered was too small to render it probable that definite hygienic inferences could be drawn. But even this small experiment has taught us much, and suggested that investigations on the lines of Professor Bowley and Professor Burnett-Hurst's inquiries would be of sanitary as well as economic importance—if, indeed, in a civilized commonwealth economic and hygienic interests can ever be separated.

I conclude with a few remarks upon the significance of some wider data.

Working Life.

Hygienists are grateful to Dr. E. C. Snow for devising, and to the late Registrar-General, Sir Bernard Mallet, for arranging the publication of, a long series of sectional life tables based on the experience of the years 1911 and 1912.

It is of course easy to overrate the importance of the life table as an instrument of hygienic research. The beauty of the technical methods used for its construction and graduation appeal to the professional statistician, the symbolical notation in which those methods are (necessarily) displayed strikes awe into the heart of the non-actuarial medical officer, who is apt to suppose that there is a special intellectual prestige attaching to those who can freely utter such mysterious phrases as "curtate expectation of life" or "osculatory interpolation." One sometimes forgets that life-table constants are subject to precisely the same difficulties of interpretation as the death rates themselves from which they are deduced. The life table of any district is based upon the death toll taken of *contemporaneously existing* lives. Could we make a life table for persons followed individually from the cradle to the grave, the result would probably differ greatly from such tables as we can construct. I am a less enthusiastic admirer of the life table as an instrument of research than is Dr. Brownlee. The life tables we have do, however, answer some important questions.

By the age of 25 the period of apprenticeship is almost over, by 55 the prime of working power in the industrial classes is past. Of the possible term of thirty years here covered what is the average number actually lived in areas of different industrial and geographical types? In the table I provide such approximations to the answer as can be deduced from sectional life tables (the short tables of the General Register Office have been used).

TABLE VII.—"*Partial*" *Expectation of Life for Males during the Thirty Years from Attained Age 25.*

NORTH-WEST OF ENGLAND.

Great Industrial Towns.—Bolton, 26.8; Burnley, 27.3; Halifax, 27.1; Huddersfield, 27.1; Leeds, 26.7; Oldham, 26.5; Preston, 26.6.—Average, 26.9 years.

Non-Industrial Areas.—County of Cumberland, 27.1; County of Westmorland, 27.7; Rural Districts of the West Riding, 27.5.—Average, 27.4 years.

SOUTH-WEST OF ENGLAND.

Industrial Towns.—Bristol, 27.1; Plymouth, 26.4; Southampton, 26.2.—Average, 26.6 years.

Non-Industrial Areas.—Dorset, 27.8; Wilts, 27.8; Devon (rural), 27.7.—Average, 27.8 years.

MIDLANDS.

Industrial Towns.—Coventry, 27.7; Derby, 27.6; Nottingham, 26.8; Leicester, 27.3.—Average, 27.4 years.

Non-Industrial.—Derbyshire (rural), 27.8 years.

EAST ANGLIA.

Industrial.—Norwich, 27.6 years.

Non-Industrial.—Rural Districts of Norfolk and Suffolk, 27.9 years.

At a glance such figures as these are reassuring. The difference between the best and worst in the table, between Oldham and the rural districts of Norfolk and Suffolk, is only 1.4 years. But were we able to take them at their precise face value these figures would

be very depressing. The average value of the seven Lancastrian industrial towns is 26.9 years. Between the rural areas of different parts of the country the administrative counties of Westmorland, Dorset, Wiltshire, the rural parts of Norfolk, Suffolk, Devon, and Derby there is hardly any difference—the lowest is 27.7, the highest 27.9, the average 27.8. Therefore every man who passes his productive years from 25 to 55 under the rural conditions will have 0.9 of a year more to live in that productive period than a man of the same entering age in the industrial towns; the urban man power is 96.76 per cent. of the rural man power, defining man power as years of life lived from 25 to 55. Put in other words, were the urban conditions hygienically as good as the rural conditions the urban population might be reduced to 96.76 per cent. of its strength, and it would possess precisely the same productive power as now, although these rural samples themselves only yield 92.67 per cent. of the theoretically possible span, thirty years.

As a further illustration, I consider the partial expectation at 20 for the thirty-five years to 55 (males). Having applied the method to the ten industrial registration districts of Stoke-on-Trent, Wolverhampton, Walsall, West Bromwich, Dudley, King's Norton, Birmingham, Aston, Leicester, and Nottingham, and to the agricultural district formed by excluding the registration district of Lincoln from the registration county, the following results were reached:

In 1851–60 the urban man power was 96.7 per cent. of the agricultural man power; in 1901–10 it was 97.1 per cent. of it. Sixty years ago the Lincolnshire males lost 13 per cent. of their possible time, and now lose 8.4 per cent. Sixty years ago the urban males lost 16 per cent., and still lose 11 per cent. (Greenwood, p. 178). Again, I make the reservation that results based upon the mortality of two years (which is the case of the figures used above and referring to 1911–12) have only the value of samples, and are subject to errors of sampling. Space does not permit me to discuss the evaluation of the error of sampling for a somewhat complex expression such as the partial expectation, but I find it to be of the same order as that of the death rates, and there is little reason to doubt that the kind of difference shown in these few examples is of the order of magnitude of the "true" difference.

THE VALUE OF VACCINES IN THE TREATMENT OF WHOOPING-COUGH.

BY

DONALD PATERSON, B.A., M.R.C.P.,

PHYSICIAN TO OUT-PATIENTS, THE HOSPITAL FOR SICK CHILDREN, GREAT ORMOND STREET, LONDON;

AND

JAMES M. SMELLIE, M.D.EDIN.,

PHYSICIAN TO OUT-PATIENTS, THE CHILDREN'S HOSPITAL, AND MEDICAL REGISTRAR, QUEEN'S HOSPITAL, BIRMINGHAM.

THE object of this paper is to record some observations on and the results of vaccine treatment of cases of whooping-cough. The majority were out-patients, a few being in-patients, at the Hospital for Sick Children, Great Ormond Street, during the months of January, February, and March, 1922.

For purposes of age and sex incidence we have included all those cases of whooping-cough which attended the out-patient department of this hospital during the year 1921 and the first 196 cases that attended in 1922, making 1,000 cases in all. The seasonal incidence has been taken from the 804 cases attending during 1921.

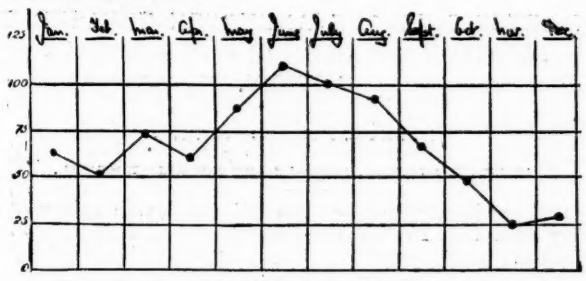


CHART 1.—Seasonal incidence, 1921. (Based on 804 cases.)

As will be seen from Chart 1 the *seasonal incidence* reached its maximum in June, when there were 109 cases, and fell to the minimum in November, when there were 25 cases. The *sex incidence* shows 530 girls to 470 boys. The *age incidence* (see Chart 2) shows the maximum at 1 to 2 years, and the vast majority occur before the age of 6 years, or within twelve months of starting school.

Symptoms.

The average duration of the cough before the onset of the whoop in 100 of our cases seen during January, February, and March, 1922, was two weeks. In some cases the whoop started within a few days of the onset of the cough, but in other cases was delayed as long as three to four weeks.

The onset, duration, and termination of the whoops and vomits were on the average identical. At the onset the

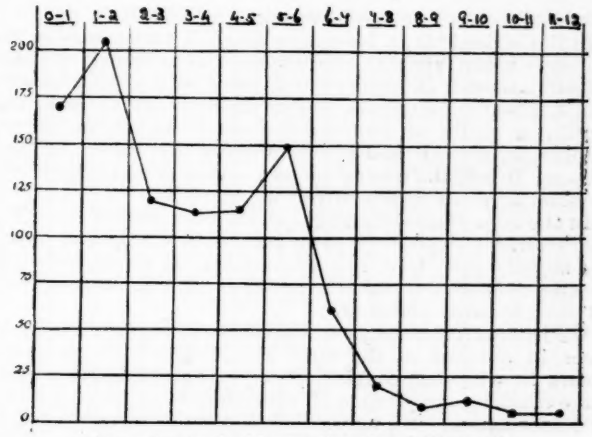


CHART 2.—Age incidence. (Based on 1,000 cases.)

whoops were much more severe and frequent during the night than by day. As the disease declined the whoops became gradually less during the night, and in the later stages of the disease were entirely confined to the day.

In very young children gross wasting as a result of the incessant vomiting was a very serious feature, and was of importance even in the older children. Where vomiting was severe obstinate constipation was a concurrent symptom.

A sublingual ulcer was looked for on at least one occasion in 62 cases; it was present in 11, or 18 per cent. In several it was not present at the first examination early in the disease; it was usually found to develop during the second or third week. In 9 of these cases, or 82 per cent., the age of the children was between 1 and 3 years. The ulcer healed very rapidly; a careful and continuous search would, we have no doubt, reveal this ulcer in a much larger proportion of cases.

Bronchitis is present in the majority of cases. The signs may be scattered rhonchi; and early in the disease, almost at the level of the diaphragm, a girdle of fine crepitations is very frequently heard. In small children massive collapse, dyspnoea, and cyanosis sometimes complicated the clinical picture and gave rise to the diagnosis of bronchopneumonia. These physical signs are, in our opinion, brought about by the thick tenacious secretion present in the bronchi plugging the smaller bronchioles of the most dependent parts of the lungs, thus giving rise to collapse in this area with consequent fine crepitations.

In 4 out of 80 cases the tonsils had been removed. In 18 cases there was injection but no enlargement; 18 others showed moderate enlargement with injection; in the remaining 40 cases, or 50 per cent., the tonsils were grossly enlarged and injected. The injection is, no doubt, secondary to the coughing.

Duration.

The average duration of the disease in our 100 cases, as measured from the onset of the cough to the termination of the whoop or vomit, was six and a half to seven weeks, while the average duration of the whoop was four and a half to five weeks.

Complications.

Epistaxis was a not infrequent complication, and was much commoner in older children, though of minor importance. Bronchopneumonia, on the other hand, occurred in 5 per cent. of 200 cases, but gave rise to grave anxiety, 4 out of our 10 cases proving fatal. Among other complications were subconjunctival haemorrhages and laryngitis; puffiness of the face was not infrequent, and in the more severe cases called for an examination of the urine to exclude nephritis. Pain, referred to the diaphragm, the intercostals, and the abdominal muscles, due to the violent straining and coughing, was frequently complained of by the older children. Convulsions occurred only in association with bronchopneumonia, and the two cases we observed both proved fatal. *Post-mortem* examination in one of them showed on microscopical examination marked cerebral congestion only.

In 5 to 10 per cent. of our cases a fresh attack of bronchitis caused a recurrence of the whoops.

Mortality.

The mortality in 200 cases observed during three months was 2 per cent.; these four cases died of bronchopneumonia, and two of them terminated in severe convulsions.

Diagnosis.

In the earliest stage, before the cough is paroxysmal or the whoop or vomit appears, the diagnosis is extremely difficult. A fretful, peevish child aged 1 to 3 years, with a short hacking cough, possibly laryngitis, slight unexplained pyrexia, and usually a girdle of fine crepitations at the level of the diaphragm, should make one suspect the onset of this disease. Briefly the clinical picture is that of an ill child; the physical signs are comparatively slight.

In the later stages the diagnosis becomes less difficult. The characteristic expiratory paroxysms with whoop and vomit, the slightly puffy face, the subconjunctival ecchymosis, the occasional epistaxis, and the presence of a sublingual ulcer, all point towards pertussis.

We have unfortunately occasionally observed this sublingual ulcer in children of the same age in which it commonly occurs in whooping-cough (1 to 3 years), and in these cases there could be no question of whooping-cough playing a part in its formation. We agree that these ulcers are formed by the tongue striking on the sharp lower incisors during the forcible expiratory spasms of coughing.

In our opinion the whoop is not necessary for diagnosis. In eight families where several children were suffering from undoubted whooping-cough one child was observed to have typical cough without the whoop. On the other hand, a typical paroxysmal cough with a vomit and a whoop may be found in cases of tuberculosis with caseous mediastinal glands. The presence of tuberculosis in other parts of the body and the length of the history may help to clear up the diagnosis. A foreign body in the trachea may also closely simulate pertussis in this respect.

Treatment.

The number of patients treated with vaccine and followed to their recovery was 64. Of these, 6 were given bi-weekly injections and treated as in-patients, while the remaining 58 were given weekly injections while attending the out-patient department.

Dosage of Vaccines.—The vaccine was supplied by a well-known London laboratory, and the dosage we employed was as follows:

Initial injection:	
Bordet's bacillus	500 million.
Influenza bacillus (Pfeiffer)	125 ,,
Pneumococci	25 ,,
Second injection:	
Bordet's bacillus	1,000 million.
Influenza bacillus	250 ,,
Pneumococci	50 ,,
Third and subsequent injections:	
Bordet's bacillus	2,000 million.
Influenza bacillus	500 ,,
Pneumococci	100 ,,

For the purposes of this paper the length of the disease was defined as from the onset of the cough to the termination of the whoop.

RESULTS.

A. *Vaccinated Cases.*

1. In 58 of the out-patient cases treated with weekly injections the average duration was 7 weeks; those treated within the first week of the onset showed an average duration of 5.7 weeks; those in the second week of the disease an average duration of 5.9 weeks; those in the third week an average duration of 7.2 weeks; in the fourth week an average duration of 7.6 weeks; in the fifth week an average duration of 9 weeks.

2. In the 6 cases treated with bi-weekly injections as in-patients the average duration was 6.6 weeks.

B. *Non-vaccinated Cases.*

The average duration of the disease in 42 control cases that were not treated with vaccine was 6.4 weeks.

Did the vaccine shorten the duration or severity of the whoop?

In the vaccine-treated cases the average duration of the whoop was 4.8 weeks; in the non-vaccinated cases 4.4 weeks. Even in the vaccinated cases treated in the first or second week, and occasionally before the whoop developed, the shortening of the duration of the disease would appear to be negligible. In several cases exposed to infection and seen early in the stage of incubation, vaccine treatment appeared to have no appreciable value as a prophylactic measure. It appeared to us that the vaccine which we used when given weekly, or bi-weekly, entirely failed to influence the duration or the severity of the disease either favourably or unfavourably.

The administration of vaccines to children presents difficulties. The injections were painful and upset the children considerably, especially the larger doses, so that they lost confidence in us. Unless whooping-cough vaccine can be shown to be of more therapeutic value than it has been in our hands, we consider that the distress to the child, and the risk of losing his confidence, does not justify its use.

We lack experience in vaccine therapy and fully realize that the wrong organism, intervals between injections, and dosage may have been used in this investigation. We are of the opinion that the following points in treatment aid in the shortening of the disease and the prevention of complications.

Hygienic.—Fresh air seemed an all-important point, and undoubtedly those children allowed to run about outside with the usual precautions against exposure did much better than those confined to the house. Even those with a moderate degree of bronchitis benefited greatly with this treatment. Where there is insomnia and exhaustion, consequent on the greater severity and frequency of the whoops at night, this can be alleviated by getting the child to rest and sleep during the day.

Dietetic.—Anorexia and vomiting being constant symptoms, wasting was a constant sequel; it was often found necessary to vary the diet frequently, children taking and retaining cow's milk or some of the proprietary foods best during the acute stage. The all-important point seemed to be to prevent this wasting and to keep the child in as good physical condition as possible. The feeds were given in small amounts and at frequent intervals, and when possible immediately following on a paroxysm of coughing and vomiting.

Medicinal.—We found cod-liver oil and malt a most useful remedy. Children on this treatment actually seemed to put on weight, and during the stage of recovery from the disease a preparation of iron was added to the cod-liver oil with great benefit. To cases of bronchitis with numerous moist sounds in the chest the following mixture could be given with great benefit to a child aged 1 year, and in suitable doses to older children, every four hours:

Tincture of belladonna	m.ij
Potassium bromide	gr. iij
Glycerin	m x
Water	to 3j

All our cases, both vaccinated and non-vaccinated, were given cod-liver oil and malt in suitable doses, with a liniment for the chest.

Our thanks are due to Miss Marian A. Lawson, of the Royal Free Hospital, for her very valuable assistance in administering the vaccines.

AN ARTERIO-VENOUS ANEURYSM TREATED BY LIGATION OF THE LEFT SUBCLAVIAN ARTERY.

BY

CHARLES NOON, F.R.C.S.,

ASSISTANT SURGEON, NORFOLK AND NORWICH HOSPITAL.

LIGATION of the first part of the left subclavian artery is so rarely done that I think the following case may be worthy of record.

History.

A man, aged 24, was admitted to the Norfolk and Norwich Hospital on June 6th, 1921, complaining of swelling of the left upper extremity. He stated that while serving in France he was wounded in the region of the left clavicle on May 17th, 1917. After receiving treatment in various hospitals he was discharged from the army in November, 1917, on account of pain and weakness of the left arm. At the time of his discharge from the army the arm was not swollen, but at the end of 1918 he began to notice gradual increase in size of the whole of the left upper extremity, and a pulsating swelling appeared in the region of the left clavicle. The size of the arm continued to increase until there was very little use in it, and he had to carry it about in a sling. Dilated veins appeared on the surface of the axilla, arm, and forearm, and the skin of the left upper extremity assumed a dull livid colour. A superficial ulcer appeared on the flexor surface of the forearm in June, 1921, and rapidly increased in size.

Condition on Admission.

In regard to his general condition, the patient was a fairly healthy-looking, but somewhat pale man. His temperature was 98°, pulse rate 80, respirations 20; tongue clean, teeth fair. With reference to the local condition the left supraclavicular fossa was obliterated by a well-marked pulsating swelling. Pulsation was also visible below the clavicle, but was less well marked than above it. There were numerous dilated and tortuous veins running over the left upper extremity, especially well marked in the axilla. The whole of the arm and forearm was a dull livid colour; the arm was much swollen, the circumference of the upper arm 4 inches below the acromion process measuring 17 inches. There was a superficial ulcer situated on the flexor surface of the forearm, having all the characteristics of a varicose ulcer. The movements of the thumb and fingers were normal: there was no loss of sensation in the hand. The pulsation in the region of the left clavicle was felt to be expansile and diffuse, extending above and below the bone. A well-marked bruit could be heard over the whole of the left side of the chest, especially well marked over the pulsating swelling above and below the clavicle. The left radial pulse was less easily felt than the right. Heart and lung normal.

X-ray Examination.—There was a small foreign body situated behind the centre of the left clavicle.

A diagnosis was made of arterio-venous aneurysm between the second part of the left subclavian artery and the left subclavian vein. Rest, careful bandaging, and elevation of the arm improved the condition slightly, but considerable swelling persisted in spite of these measures. The varicose ulceration of the forearm continued to increase; operative treatment was therefore decided upon.

Operation: Ligation of the First Part of the Left Subclavian Artery.

On September 25th, 1921, an anaesthetic (chloroform and ether) having been administered, the patient was placed in the dorsal position, the shoulders slightly raised, and the head turned towards the right side. An incision was then made from the centre of the anterior border of the left sterno-mastoid muscle extending downwards to a point just internal and below the left sterno-clavicular joint. A second incision was then made from this point extending outwards parallel with and half an inch below the left clavicle. A triangular flap of skin and superficial fascia was then raised, exposing the left border of the manubrium sterni and the inner two-thirds of the left clavicle; the attachments of the sterno-mastoid muscle to the clavicle were then defined. The muscular attachments to the superficial surface of the clavicle were next divided; the periosteum covering the superficial aspect of the clavicle was divided and separated from the bone; the clavicle was then divided at its centre and the inner half removed subperiosteally. The left half of the manubrium sterni was next cut away. The base of the wound now consisted of the periosteum, which covered the posterior surface of the manubrium sterni, the periosteum separated from the posterior surface of the clavicle, a layer of deep cervical fascia and muscular tissue consisting of part of the sterno-hyoid and sterno-thyroid muscles. The base of the wound was then enlarged by dissecting away the exposed periosteum; the sterno-hyoid and sterno-thyroid muscles were defined and retracted. The common carotid artery was then defined running along the inner aspect of the wound. The left innominate vein, formed by the left internal jugular and left subclavian veins, was now defined, and retracted outwards and downwards with some difficulty. The left subclavian artery could then be felt at the bottom of a deep wound surrounded by fatty tissue. About half an inch of the vessel was exposed, and it was found that compression of the vessel caused complete arrest of pulsation in the aneurysm. An aneurysm needle was then passed round the first part of the subclavian artery, and the vessel tied with No. 3 silk by a knot after the method of Ballance and Edmunds. This method consists of passing the separate strands of ligature material round the vessel, tying each in a simple knot in the same direction, and then by using the two strands on each side as one completing the square knot. A few bleeding points were ligatured and the wound closed; a small rubber drainage tube was retained in the wound for twenty-four hours. Dressings were applied, and the hand and limb carefully bandaged. The time taken to complete the operation was two and a half hours.

Post-operative Treatment and Progress.

On September 26th, twenty-four hours after the operation, there was considerable respiratory distress, the respirations varying from 44 to 58 a minute; the pulse rate was 120, and the temperature was 100.5°. On September 27th the pulse rate was 140, fair volume and tension; the respirations 52, and the temperature 102°. The condition appeared to be due to an attack of acute bronchitis, probably caused by the administration of an unusually long anaesthetic. The condition gradually improved, and at the end of a week the temperature, pulse, and respiration were normal. The wound healed by first intention, and the stitches were removed on the eighth day. The radial pulse after the operation could not be felt, but the arm and forearm remained warm, and there was never any loss of sensation. No decrease in the swelling of the arm was noticed until the fifth day after the operation, when the limb began to decrease in size, so that nineteen days after the operation the upper arm had decreased 5 inches in circumference, measuring 12 inches instead of 17 inches. The varicose ulceration of the forearm began to heal rapidly, and had completely healed five weeks after the operation. Massage to the hand and forearm was started four weeks after the operation, and eight weeks from the date of the operation the patient was discharged from the hospital, when no pulsation could be felt at the site of the aneurysm, but a slight bruit could still be heard. There was excellent power in the arm, forearm, and hand.

Remarks.

This was a case of arterio-venous aneurysm between the second part of the left subclavian artery and the left subclavian vein; the condition which demanded relief was the extreme swelling of the left upper extremity, which from the size and pain which it caused completely crippled the patient. The severe varicose ulceration of the forearm, associated with the varicose condition of the veins of the arm and forearm, made the possibility of septic thrombosis a very real danger. Alleviation of the condition seemed to be possible by one of the following procedures—namely, a reconstructive operation on the blood vessels which had for its object the closure of the abnormal communication between the artery and the vein, or ligation of the first part of the left subclavian artery as near to the arterio-venous aneurysm as possible; in either case it would be necessary to expose the artery and vein on the proximal side of the aneurysmal sac. When the first part of the subclavian artery had been exposed it was found that pressure on the artery at once stopped completely the pulsation in the aneurysm. From the condition of the parts it seemed very inadvisable to attempt a dissection to separate the artery from the vein, and to attempt to expose the abnormal communication between them. It was therefore decided to be content with ligation of the first part of the left subclavian artery. The completion of the operation was followed by recovery.

Success in performing this operation would appear to depend upon the elimination of the three complications which are likely to follow—namely, haemorrhage, shock, and sepsis. Before the introduction of the antiseptic and aseptic era this operation was practically certain to result in failure. Cases of ligation of the first part of the left subclavian artery have been successfully performed and reported by Halstead of Baltimore in 1892. Dr. John C. Da Costa twice ligatured the vessel, and both patients recovered. Nassau of Philadelphia also successfully ligatured the vessel. In 1897 Curts, and in 1899 Allingham, also reported successful cases. There have certainly been other reported and unreported cases; still the operation is rarely required and seldom done.

Haemorrhage after the operation is to be avoided by paying every attention to an aseptic technique and by careful ligation of the vessel with the most suitable material. It is probable that a ligature tied with the ordinary knot is more likely to ulcerate than one tied after the method of Ballance and Edmunds. The ligature should be tied so that the vessel is merely compressed and the coats of the artery are not divided. It has been stated that Halstead and Barling consider an absorbable material should be used for the ligature material.

It is an interesting fact that gangrene of the upper extremity rarely follows ligation of the subclavian artery; this, of course, is accounted for by the very free anastomosis which is present; still, cases have been recorded in which gangrene has followed the operation, so that it is important to take every precaution to prevent it. For the control of gangrene after operation for aneurysm two things are under the control of the surgeon provided there is no indication for immediate operation—namely, the method of operating and the time of operation. In the former the primary consideration is to save as many of the affected vessels as possible; in the latter, to allow sufficient time for the establishment of the collateral circulation. In this case the immediate result of the operation was to increase slightly the swelling of the arm, but this began to rapidly decrease five days after the operation. The radial pulse ceased on ligaturing the artery, and had not returned three months after the operation; but the collateral circulation is well maintained, the swelling of the arm is only slight, and the patient can use the hand well.

I have to thank Sir Hamilton Ballance for his advice and help in treating this case.

THE report of the school medical officers of Tokyo states that in 1921 there were 4,273 cases of scrofula, 399 of anaemia, 939 of cardiac disease, and 1,335 children with narrow chests; the cases constituted 9 per cent. of the school children of the city. According to this report nearly all children who contract tuberculous disease before the age of 14 succumb before they reach the age of 20.

THE USE OF THE VAN DEN BERGH TEST IN THE DIFFERENTIATION OF OBSTRUCTIVE FROM OTHER TYPES OF JAUNDICE.

BY

J. W. McNEE, M.D., D.Sc., M.R.C.P.

(From the Medical Unit, University College Hospital.)

AT a recent meeting of the Association of Physicians of Great Britain and Ireland, held in Oxford, Professor Hijmans van den Bergh of Groningen gave a short account of his important work on the presence of bile pigment (bilirubin) in the blood serum under normal and pathological circumstances. In doing so he made reference to the test for bilirubin in serum and other albuminous fluids which is now prominently associated with his name. I have made use of this test in the wards and in experimental work for some months, and the results obtained have up to the present fully realized expectations. It was intended to wait until a much larger series of observations had been carried out, but since none of the work of van den Bergh has so far been published in English the writer has been asked to make some of the main facts accessible at once, leaving the fuller account for subsequent publication. It must therefore be understood that the conclusions reached in this short paper cannot be regarded as final, unless confirmed elsewhere or by future work on the subject.

The first account of the work of Hijmans van den Bergh on the presence of bile pigment in serum appeared in 1913,[1] and a full description of his observations has been collected in a monograph entitled *Die Gallenfarbstoff im Blute*, published in 1918.[2] More recently (June, 1921) a short summary of the main methods and facts appeared in the *Presse Médicale*.[3]

Confirmation of some of the chief results claimed by van den Bergh has already been given in Germany by Lepehne (1921)[4] and Rosenthal and Holzer (1921).[5]

The clinical application of the test in the differentiation of various types of jaundice will be dealt with here alone, although this is merely a small part of the ground which has been covered by van den Bergh. The important observations which are more concerned with experimental work on diseases of the liver, and with the occurrence of latent jaundice under conditions in which icterus has not hitherto been recognized to exist, must be omitted. It is already certain, however, that future research work on hepatic disorders must be greatly influenced by the application of the knowledge made available by van den Bergh's methods.

The chief clinical value of the test is that by its use jaundice due to obstruction of the main bile ducts by carcinoma, hepatic cirrhosis, obstruction in the portal fissure, or gall stone in the common bile duct, can be clearly differentiated from jaundice of haemolytic origin or due to functional derangement of the liver cells. In this latter category are now included the various forms of haemolytic and acholuric jaundice, and also functional jaundice, such as catarrhal jaundice, toxic jaundice in infective diseases (typhoid fever, pneumonia), icterus neonatorum, etc. It is perhaps not yet generally accepted, except by those who have followed closely the work on hepatic disorders published in recent years, that all modern work strengthens more and more the view that a true haemolytic icterus, apart from the liver, does occur, and also that "catarrhal jaundice" depends on a hepatitis with functional derangement of the liver and not on an obstruction to the bile ducts. The newer methods of van den Bergh throw further light on the question from a new angle, and entirely support both the occurrence of a functional icterus apart from biliary obstruction, and of a haemolytic icterus with which the liver itself is not concerned.

The value of van den Bergh's test in the differentiation of obstructive from what may be termed functional and haemolytic jaundice is illustrated by a few chosen reports of cases given at the end of this short communication.

MECHANISM AND TECHNIQUE OF THE TEST.

Hijmans van den Bergh began his work faced with a difficulty which has confronted all who have worked chemically or experimentally on the different forms of jaundice—namely, the want of a delicate and trustworthy test for small amounts of bile pigment in an albuminous fluid such as blood serum. The tests hitherto employed, such as the Gmelin and Huppert tests, with their various modifications, have many disadvantages (especially in albuminous fluids), and are, besides, far from delicate for quantitative estimations.

Van den Bergh has applied for his purpose the so-called "diazo reaction," first described by Ehrlich, who found that bilirubin, when dissolved in chloroform or alcohol, gives with diazonium salts a reddish colour in neutral solutions and a bluish colour in acid solutions. Making use of this reaction to detect the presence of bilirubin in blood serum, van den Bergh and Snapper found that it gives extraordinarily delicate and certain results. They observed, for example, that every normal serum contains bilirubin in a dilution of from 1 in 400,000 to 1 in 250,000. Such a dilution in human serum is readily detected by the diazo test. They found further, after much observation, that no other substance likely to be present will give the reaction, and they have never detected any other substance in a human serum, except bilirubin, which has given a positive result. Biliverdin does not react to the test. It is to be noted also that lutein, which in certain cases (diabetes, etc.) may deeply colour human blood serum and even give the appearance of jaundice to the skin, does not give the reaction.

Technique of the Test.

For the test, as ordinarily carried out, about 3 c.cm. of serum may be required, although less will suffice after some practice has been obtained. The blood is taken from a vein in the usual way into a dry test tube, allowed to clot, and the separated serum is then removed by a pipette. It is best to begin to practise the test on a case of fairly intense icterus.

Apparatus and Reagents Required.

1. A few test tubes of ordinary size.
2. Freshly prepared Ehrlich's diazo reagent. This consists of two solutions, each of which keeps well, but the mixture of the two must only be made immediately prior to the test. The two solutions are made up in the following proportions:

A. Sulphanilic acid	1 c.cm.
Concentrated HCl	15 c.cm.
Distilled water...	1,000 c.cm.
B. Sodium nitrite	0.5 gram
Distilled water...	100 c.cm.

The diazo reagent consists of a mixture of these two solutions in the proportion of 25 c.cm. of solution A to 0.75 c.cm. of solution B.

3. A graduated 1 c.cm. pipette.
4. Absolute alcohol (96 per cent.).
5. A centrifuge and centrifuge tubes.

The test is then carried out as follows: To 1 c.cm. of the serum, in a small test tube, van den Bergh adds 0.25 c.cm. of freshly prepared diazo reagent. (Lepehne, and the writer, have found that better results are frequently obtained by adding 1 c.cm. of the reagent.) One of three events may now occur:

1. *An Immediate (Direct) Reaction.*—This begins instantly and is *maximal in ten to thirty seconds.* The colour reaction obtained is a bluish-violet, of intensity depending on the amount of bilirubin present.

2. *A Delayed Reaction.*—This begins only after one to fifteen minutes, or even longer, and consists in the development of a reddish coloration, which gradually deepens and becomes more violet. (It will be seen later that this reaction is not made use of further, being replaced by the so-called *indirect reaction or test*—vide infra.)

3. *A Bi-phasic Reaction.*—In this a slight reddish colour appears immediately (ten to thirty seconds), which after a minute or much longer time is seen to deepen gradually and become more violet.

Interpretation.

If the reaction is immediate or direct an obstructive jaundice is indicated.

If a direct or immediate reaction is not obtained proceed as follows: To 1 c.cm. of serum add 2 c.cm. of 96 per cent. alcohol. The mixture is made in a centrifuge tube, which is then centrifugalized until all the albuminous precipitate has sunk to the bottom to leave a clear yellowish supernatant fluid. To 1 c.cm. of this supernatant fluid add 0.5 c.cm. of alcohol and 0.25 c.cm. of Ehrlich's diazo reagent. (The reason for the addition of 0.5 c.cm. of alcohol is to get a proper dilution for the quantitative test, referred to below, and may be omitted where that test is not being carried out.) A violet-red colour is then obtained if bilirubin be present, which is of maximal intensity almost at once.

Where no direct reaction has been given, but a perfect indirect reaction after alcohol precipitation, then the jaundice

can be inferred to be either haemolytic in origin or dependent on some functional derangement of the liver cells without obstruction.

It should be mentioned that all serums which give a direct reaction will give in addition an indirect reaction, but the converse is not, of course, true.

By these two simple tests, therefore, a distinction can be drawn between icterus due to obstruction of the main bile ducts from gall stones, tumours, hepatic cirrhosis, etc., and an icterus of haemolytic, infective, or functional origin.

What is the mechanism of the test, and how is it that the bilirubin present in the serum in obstructive jaundice reacts to the diazo reagent quite differently from the bilirubin in haemolytic, catarrhal, and other forms of jaundice?

It appears to depend on the fact that the bilirubin differs molecularly in the two conditions, and, without going deeply into theoretical considerations here, van den Bergh suggests that in the case of bilirubin giving the indirect test only, the pigment has been in some way bound to albuminoid substances in the serum, and the union is only broken down by time or by alcoholic precipitation. The reader must be referred to the original papers for further consideration of this point.

Taking this short explanation for granted, the rationale of the *bi-phasic reaction* becomes intelligible. It would appear to depend on the presence of both types of bilirubin, in different proportions, in the same serum. If the first variety predominates, the reaction might be described as *bi-phasic direct* and the other as *bi-phasic indirect*. The occurrence of the bi-phasic reaction is fortunately not very common, but until much further experience with the test has been gained it is best for the moment to draw no absolute conclusion in a case giving such a result. The writer is finding such cases of great interest at present, and it is already evident that in, for example, cardiac valvular disease with failure, back pressure, and hepatic enlargement, the icterus which sometimes occurs may be at first functional, and later obstructive in type as the hepatic enlargement increases, the bilirubin showing a gradual transition through a bi-phasic stage with the test.

Application of the Test for the Quantitative Estimation of Bile in Serum.

Although the simple test as described above will probably be the first to be commonly used clinically, it is an obvious advantage to be able to estimate the increase or decrease of bile pigment in the blood serum, especially in cases of obstructive jaundice. This may have importance, for example, in cases of suspected carcinoma of the liver, or in the recognition of the exit of a gall stone from the common bile duct. It is, of course, well known that the icteric tint of the skin changes comparatively slowly. It has also an importance in the study of various forms of "latent icterus," such as in cases of pernicious anaemia. These questions will be dealt with in a later communication.

The so-called *indirect test* of van den Bergh, which, as has been stated, is given by all forms of icterus whether obstructive or non-obstructive, lends itself easily to a quantitative estimation of bilirubin by a colorimetric method. For full details of the method the original papers should be consulted, but the main principles may be briefly given here. At first van den Bergh made use of chemically pure bilirubin to prepare a solution for comparison, but he was able soon to replace this with an artificial standard solution giving a colour suitable for comparison. This solution, moreover, is made up in a strength which can give a definite reading in "units" of bilirubin. The artificial solution consists of iron sulphocyanide dissolved in ether, in a concentration of 1 in 32,000 normal. This solution is of a colour which corresponds exactly with that of azo-bilirubin (as produced in the "indirect test") of 1 in 200,000, the quantity found to be the average amount in the serum of a healthy individual. An indirect reaction giving a colour exactly corresponding to this standard is taken as indicative of "1 unit" of bilirubin.

The Solution of Sulphocyanide.

The standard solution of iron sulphocyanide is prepared as follows:

Dissolve 0.1508 gram of ammonium iron-alum in 50 c.cm. concentrated HCl, and add water to 250 c.cm. This gives a dilution of 1 in 8,000 normal, which will keep for about six months.

To 3 c.cm. of this solution add an equal volume of 20 per cent. potassium sulphocyanide and 12 c.cm. of ether. Shake well, and when all the reddish colour has passed into the ether transfer the ether carefully, either into a colorimeter, or other comparative tube. This solution is in a concentration of 1 in 32,000 normal, and must be prepared freshly each day a test (or tests) is made.

I have made use of the simple Autenrieth-Funk colorimeter for the quantitative estimation, but any form of colorimeter is, of course, applicable. For rough clinical use dilution of the fluid obtained in the indirect test may be made in test tubes of equal calibre, and reasonably accurate comparative results obtained. It should be pointed out that even with the complete technique of van den Bergh the results are of an accuracy which is adequate for clinical purposes only. There are various fallacies which prevent a completely accurate estimation of the whole of the bilirubin present in any serum. One of the chief of these depends on the fact that some bile pigment is always carried down in the albuminous precipitate when alcohol is added. The amount, however, is always small, and is greater in cases of obstructive than of non-obstructive icterus.

REPORT OF CASES.

Case 1.

Female. History of three attacks of jaundice, with vomiting and epigastric pain, within a period of a few months. Stools clay-coloured. X-ray examination showed two shadows at the level of the twelfth rib, to the right of the middle line, but deeply back in the body. There was doubt as to what these shadows were—biliary calculi, renal calculi, or calcified glands. On the clinical features of the case a diagnosis of gall stone blocking the common bile duct was made.

On applying the van den Bergh test the following result was obtained:

Direct test ... Negative.
Indirect test ... Positive (3 units of bilirubin).

Exploratory laparotomy was performed; the gall bladder and bile ducts were normal, and patent throughout. The liver was not enlarged, but icteric in colour. The diagnosis was changed to catarrhal jaundice, and the patient made a straightforward recovery.

Case 2.

Female. This patient, a nurse in a fever hospital, had been previously admitted for jaundice, which was said to have followed a febrile illness of some weeks' duration. Typhoid was at first suspected, but the Widal reactions for the enteric group of fevers were negative. The jaundice passed off, but the patient was re-admitted for a second attack, accompanied by pain in the right hypochondrium. The stools were light coloured. A diagnosis of gall stones was made.

The result of the van den Bergh test was as follows:

Direct test ... Negative.
Indirect test ... Positive (4½ units of bilirubin).

The abdomen was opened, but the gall bladder and bile ducts were found to be normal. The patient quickly recovered, and the jaundice passed off.

Case 3.

Female. History of several attacks of severe pain in the right hypochondrium. Never jaundiced until one week before admission. Jaundice of moderate degree. Cholecystitis was the diagnosis regarded as probable.

The van den Bergh test gave the following result:

Direct test ... Positive.
Indirect test ... 4 units of bilirubin.

At operation the gall bladder was found to be much contracted and embedded in dense adhesions passing along the portal fissure. One large stone was removed from the gall bladder, but examination of the common bile duct was almost impossible owing to the dense adhesions. A leak unfortunately occurred from the septic gall bladder, and fatal peritonitis followed. At the necropsy the gall bladder was found to be greatly contracted and strictured. The common bile duct was embedded in dense adhesions, but no stones were found.

Case 4.

Male. History of jaundice of three weeks' duration; loss of weight; stools light coloured. Nothing could be made out by palpation of the abdomen.

The van den Bergh test resulted as follows:

Direct test ... Positive.
Indirect test ... 12 units of bilirubin.

At operation a carcinoma of the head of the pancreas was found, obstructing the ampulla of Vater.

The writer wishes to thank members of the staff of University College Hospital and Lewisham General Hospital for access to cases. The work forms part of an investigation carried out under the auspices of the Medical Research Council.

REFERENCES.

[1] Hijmans van den Bergh, A., and Snapper, I.: Die Farbstoffe des Serums, *Deut. Arch. f. klin. Med.*, 1913, cx, 540. [2] Hijmans van den Bergh, A.: Monograph, *Die Gallenfarbstoff im Blute*; Leiden, van Doesburgh, 1918; and Barth, Leipzig, 1918. [3] Hijmans van den Bergh, A.: La recherche de la bilirubine dans le plasma sanguin par la méthode de la réaction diazoïque, *Presse Médicale*, 1921, No. xlv, 441. [4] Lepehne, G.: Weitere Untersuchungen ueber Gallenfarbstoff im Blutserum des Menschen, *Deut. Arch. f. klin. Med.*, 1921, cxxxv, 79. [5] Rosenthal, F., and Holzer, P.: Beiträge zur Lehre von den mechanischen und dynamischen Ikterusformen, *Deut. Arch. f. klin. Med.*, 1921, cxxxv, 257.

AN ETHEREAL EXTRACT OF STRAWBERRIES FOR THE TREATMENT OF SPRUE.

BY

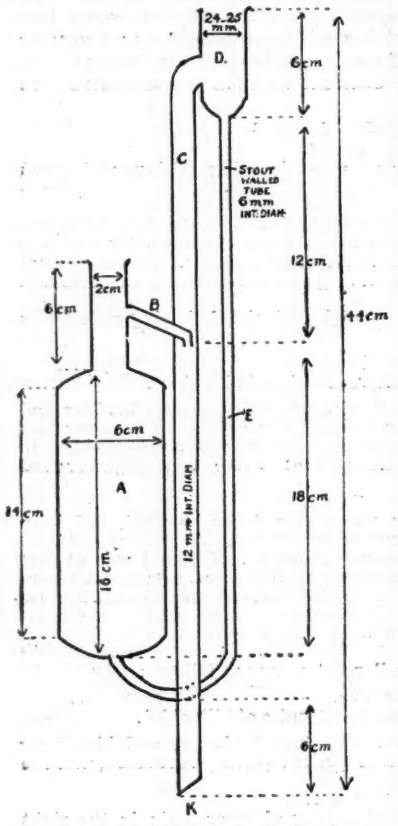
ALDO CASTELLANI, C.M.G., M.D., M.R.C.P.,

AND

K. C. BROWNING, M.A., F.I.C.

[A Preliminary Note.]

THE favourable influence of a strawberry diet on sprue has been known for some time. As it is difficult and expensive to get strawberries except in the short season, and, moreover, strawberries forcibly grown out of season do not seem to have the same beneficial effect, we sought a method by which the active principle or principles could be extracted and stored.



Continuous extraction apparatus for extracting a solution with a light solvent. A, Condenser is fitted at D. The solvent is in a flask at K. The solution to be extracted is placed in A, which is then closed by a cork. Small Raschig rings can be put in A to help the extraction.

The experiments of Dr. S. S. Zilva (*Biochemical Journal*, 1920, pp. 494–501) and those of Osborne and Mendel (*Biochemical Journal*, 1920) on the extraction of antiscorbutic and antineuritic principles from cabbages and carrots suggested the method which was adopted. Dr. Zilva showed that it was possible to extract, by means of alcohol, the fat-soluble factor from cabbages and carrots, and that the alcoholic extract also contained the antineuritic and, to a smaller extent, the antiscorbutic factors. He also showed that if the alcoholic extract of cabbages and carrots were further extracted with ether, the ether contained a substance which promoted recovery and renewed growth in rats declining in weight on account of a fat-soluble factor deficiency.

After a number of preliminary experiments, the following procedure was adopted:

Fresh strawberries were crushed with about 5 per cent. of their weight of absolute alcohol and filtered in a powerful filter press. The juice was then extracted for days in a continuous ether-extraction apparatus. The ethereal extract was immediately concentrated in a vacuum over phosphorus pentoxide, a small quantity of either starch or lactose being added. The residue was dried as completely as possible in a vacuum over phosphorus pentoxide, as this appears to ensure greater stability.

The apparatus used is illustrated, and is very convenient. To get the most rapid extraction by thoroughly mixing the solvent with the solution being extracted, a number of Raschig rings are placed in A. These consist of rings whose diameter is equal to their length. They can be made of any suitable material—for example, by cutting 5/16 in. aluminium tubing, 22 gauge, or from glasses. Prolonged experience has shown their value in extractions (cf. Bayer and Co., *Journal of Soc. Chem. Ind.*, 1919, 752a).

The extract we have prepared (mixed with a little starch) is of a dark red colour, has a granular-scaly appearance, is somewhat soft, and has a very powerful fragrant smell of fresh strawberries. A minute quantity of it has been kept in an amber tube for the last ten months (since last June), and apparently has not lost any of its characteristics, being of the same colour, and its fragrant smell being just as strong.

The experimental investigation of this extract is difficult, as sprue cannot be reproduced in the lower animals; we have to rely therefore only on clinical observations, but owing to the question of expense only a very small amount of extract was prepared, and our clinical investigation has been most limited. We may say that we have tried it in two cases of typical sprue in conjunction with the usual milk diet and alkaline treatment. It was given in 5-grain doses three or four times a day and seemed to have a beneficial effect, apparently hastening the improvement in the general condition; but much further work will be necessary before it will be possible to come to any definite conclusion as regards its therapeutic effects. We have thought it advisable, however, to publish this brief note to enable other observers who might be interested in the subject to prepare the extract during the approaching strawberry season, and to experiment further with it.

HYDRONEPHROSIS DUE TO ABERRANT RENAL ARTERY.

BY

E. C. BEVERS, M.B., B.CH.OXON., F.R.C.S.ENG. AND EDIN.,

HONORARY SURGEON, RADCLIFFE INFIRMARY, OXFORD, AND LITCHFIELD LECTURER IN SURGERY, OXFORD UNIVERSITY.

SOME doubt has recently been expressed as to how far abnormal renal vessels are responsible for the hydronephrosis with which they are associated. In the following case the hydronephrosis appeared to be directly due to the aberrant vessel, and the symptoms disappeared after the operation, which consisted simply of division of the abnormal vessel.

E. H., a well-developed, healthy young man of 22, stated that in the summer of 1918 he experienced pain under the right costal margin, and in the mid-axillary line; this pain went through to his back, but never down the flank or into his leg. The attacks of pain were infrequent to begin with and of short duration; later they became more frequent and more severe, generally coming on in the early morning, lasting about two hours, and passing off after he had walked about a little.

At the commencement this pain came on about once a fortnight; these attacks have gradually increased in frequency, and at the present date (January 5th, 1921) they are appearing three times a week.

In the early part of 1920 there was one bad attack which lasted twelve hours and kept him in bed for a few days. When the pain is severe there is biliary vomiting, but blood has never been brought up; there was no frequency of micturition during the attacks, but he states that there was frequency and the passage of an increased quantity of urine after the attacks.

Between the attacks he feels quite well, his appetite is good, and he has lost no weight, and no history of jaundice could be obtained. He had suffered from malaria while on foreign service in 1916 and 1917.

I have given this history in detail as the patient was very clear as to the nature of the attacks, their increasing frequency and severity, the relief obtained by moving about, and his perfect health in between the attacks.

The right kidney was palpable, not unduly mobile, and at the time did not appear to be enlarged, but was distinctly tender. The left kidney was not palpable, and nothing else of an abnormal nature could be detected in his abdomen. A radiograph of both kidneys was taken, but was negative. His urine was normal, and cystoscopic examination showed both ureteric orifices to be normal and acting well.

Operation.

On January 10th, 1921, the right kidney was exposed by the usual oblique lumbar incision; it was found to be enlarged, and some difficulty was experienced in delivering the lower pole; when the kidney was eventually brought up to the surface, this difficulty was found to be due to an aberrant renal vessel which was passing directly outwards and behind the ureter to the extreme lower pole of the kidney. This was divided and ligatured; the pelvis was found to be dilated to a considerable extent above the level of the divided artery; the ureter below was traced downwards for some distance, and appeared to be of normal calibre. The pelvis of the kidney was opened and a catheter passed down into the ureter without difficulty; there was no evidence of valve or constriction at the junction of the ureter with the pelvis of the kidney. The opening in the pelvis was sutured, the kidney dropped back, and the wound closed with a small drainage tube in the upper angle. There was no leakage of urine. The patient made a good recovery, and has been quite free from his symptoms since.

I first saw this patient in August, 1920, and was unable to come to a diagnosis. He had consulted several medical men from time to time, and was referred to me again in January, 1921, by a pensions board for an explanation of his symptoms, as the question had arisen as to whether his condition could be attributed to military service.

I never saw the patient during an attack of pain, which is perhaps the reason why no enlargement of the kidney was made out on examination; I was induced to explore the kidney because it was obvious that the patient

was suffering very severe discomfort, which rendered him unfit to follow an occupation, and because from time to time one comes across cases of unilateral renal pain in which no very obvious explanation can be found for the patient's symptoms. An operation in such case may, as here, reveal the cause of the pain. In another similar case I found at operation a cyst of the left renal cortex (the size of a pigeon's egg); it was not palpable before operation, and its removal cured the patient's symptoms. In other cases where no cause for the pain can be found at the operation, simple decapsulation of the kidneys will often effect a cure; so that exploration of the kidney concerned is always justifiable in cases of continued renal pain without obvious cause. That the artery was the cause of the hydronephrosis in this case seems a reasonable assumption, as the dilatation extended to the point where the vessel crossed behind the ureter, and ceased below that point, and as the patient's symptoms have disappeared after division of the vessel.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

CONGENITAL ABSENCE OF DELTOID MUSCLE.

WHILST examining a man, aged 23, for life assurance I discovered the fact that he had no right deltoid muscle; he was otherwise of normal muscular development. He knew of no muscular peculiarity in either of his parents or his brothers. He had served four years in the army during the late war, and was well able to carry out his duties. It was interesting to note how he managed to raise his arm in the absence of the deltoid muscle. He could abduct his arm quite normally until it reached the height of his shoulder; it then became tremulous. He gave a slight jerk, which dislocated the head of the humerus backwards until it rested apparently against the muscles attached to the spine of the scapula. With this firm support the pectoral muscles seemed to be able to raise the arm to its full extent upwards.

When standing at ease the head of the humerus showed up well under a very thin covering of skin and subcutaneous tissues, the capsule of the joint was thin and loose, and the head of the bone could be moved freely to and fro in its socket. The arm hung down by the side with the elbow slightly bent and pointing outwards; the hand was rotated inwards with the radial side resting against the leg.

The biceps muscle was specially well developed, and he asserted that his right arm was stronger than his left. He had never felt inconvenience from the absence of the deltoid.

London, E.C. E. J. TYRRELL.

A CASE OF HEAD INJURY.

THE following case may be of interest to record as showing the great degree to which the brain may be damaged with little sign of external injury:

On Sunday, April 2nd, about 9.40 p.m., a girl, apparently about 20 years of age, was brought unconscious to my house, with the history that from a bus travelling at a moderate speed she had jumped off facing the wrong way and fallen on her back.

I could find no external sign of injury except a very slight degree of bogginess above the occiput. There was no bleeding from mouth, nose, or ears. The pupils were equal, neither contracted nor dilated, and the corneal reflex was present, though not brisk. She could not be roused by shouting.

During the first ten to fifteen minutes Cheyne-Stokes breathing was marked, and towards the end of that time she began to vomit and move her head and limbs in a restless manner; just before the vomiting her pupils became nearly fully dilated. After this her breathing became quiet and regular except when interrupted by vomiting or retching. Later on movements became more purposeful—for example, she tried to remove her gloves by biting the tips of the fingers and pulling out her hands. At 10.30 p.m., when she left the house, her pupils were, as at first, neither contracted nor dilated. She could still not be roused to answer questions, nor did she make any sound herself.

As the identity of the girl could not be discovered she was sent in an ambulance to the local cottage hospital. The matron reported afterwards that the girl was restless and retched several times without the unconsciousness becoming any less deep. Her condition remained the same until 1.50 a.m., when she suddenly stopped breathing and died about two minutes later, without becoming cyanosed.

Post-mortem examination showed a small abrasion above the right elbow as the only external sign of injury. The scalp above the occiput, over an area about two inches square, and the right temporal muscle were infiltrated with blood clot. There was subpial haemorrhage over the whole upper surface of the left cerebral hemisphere, and disintegration and haemorrhage at both frontal poles, particularly the left. There was, lastly, an extradural haemorrhage of about three drachms in the right middle fossa. No sign of fracture could be found. No examination of the rest of the body was made.

The diametrical transmission of the injuring force was most marked, as the infiltration of the scalp was greater on the right side than on the left. The mechanics of the meningeal haemorrhage is more difficult to understand. I can only suggest that, since a considerable degree of deformation of the skull is possible in a young subject (the girl's age was 17), the meningeal artery might be damaged by momentary stretching. It is true that an elastic artery might be expected to recover from stress better than the more rigid skull, but it is hard to suggest any more plausible theory. In any case the disparity between the clinical symptoms and the internal damage must remain the most interesting feature of the case.

Grays, Essex. L. G. JACOB, M.B., B.Ch.Cantab.

PAIN IN THIGH: CEREBRAL AND PULMONARY HAEMORRHAGE: DEATH.

IN the BRITISH MEDICAL JOURNAL of April 22nd, 1922 (p. 635), Dr. Wilfred Harris states that intraspinal haemorrhage in the region of the cauda equina may, after clotting, cause obscure pain in the lower extremities which may lead the medical attendant astray.

A man, aged 30, of previous good health, suffered from intense pain in his left thigh. I could find nothing locally to account for his pain, and prescribed a liniment, which he said gave him relief. After a few days' suffering he returned to work.

A little later he complained of severe pain under the right mamma. His temperature was raised; as I heard a rub I strapped his chest, with good results. I saw no reason to doubt my diagnosis of pleurisy, but was puzzled by oozing of blood from his gums. Scurvy and a tropical disease were discounted. A few days later his pleurisy had cleared up, but his gums were now bleeding freely. Suddenly he passed into a state of unconsciousness and died in two hours.

Post mortem I found a recent haemorrhage in the internal capsule and a haemorrhage into the right lower lobe of the lung anteriorly. The cause of the haemorrhages I could not decide on.

The pain in his thigh was a mystery till I read Dr. Wilfred Harris's article. Possibly he had had an intraspinal haemorrhage.

Had I examined his nervous system carefully when I first saw him I might have detected some signs and symptoms, but pains in the legs are fairly common, and when a pain is relieved by a simple liniment one does not think of rare diseases.

Kilnhurst, near Rotherham. CHARLES J. HILL AITKEN, M.D.

SIMPLE TEST FOR SUGAR.

A DROP of urine containing sugar evaporated on a microscope slide over the flame of a spirit lamp leaves a "tacky" glistening film of syrup. Further heating turns this film a rich golden colour. Full heating converts the deposit into burnt sugar or caramel. Urine containing 14 grains to the ounce, according to fermentation test, gave the reaction after dilution with five times its volume of water. The test was demonstrated at a meeting of the North Lancashire and South Westmorland Branch at Kendal last October.

JOHN LIVINGSTON, M.D.Durh., F.R.C.S.Ed.

Barrow-in-Furness.

THE Graduate School of Medicine of the University of Pennsylvania, in association with the Medical Society of the State of Pennsylvania, is undertaking the establishment, at a number of points throughout the state, of post-graduate medical extension groups, whereby medical practitioners situated far from the hospitals of the larger cities will be able to keep in touch with recent developments in clinical work and discoveries in medical science.

Reports of Societies.

CHOREA GRAVIDARUM.

A MEETING of the Midland Obstetrical and Gynaecological Society was held at the King Edward VII Hospital, Cardiff, on April 6th, when the President, Professor EWEN MACLEAN, read a short communication on three cases of chorea gravidarum. The cases described conformed to the type of ordinary, or Sydenham's, chorea as distinguished from the far more grave Huntington's chorea. As regards etiology of chorea gravidarum it was generally held that in these cases we were dealing with a true chorea and not a manifestation of toxaemia. This view was supported by the frequency of a rheumatic history, evidence of endocarditis in a large proportion of cases, and the detailed resemblance to Sydenham's chorea, while in the majority of cases other evidences of toxaemia, such as albuminuria and severe vomiting, were absent. The incidence of the disease was commonest in primigravidae, though it might recur in subsequent pregnancies, and the onset was more frequent in the earlier months of pregnancy. Milder types tended to recover under treatment, rarely, if ever, developed mental symptoms, and only exceptionally miscarried. The severe types were frequently associated with abortion, and were held to be responsible for a maternal mortality as high as 20 to 30 per cent. As regards treatment, mild cases responded to rest and dieting associated with arsenic, bromide, chloral, etc., as the symptoms indicated. In severe cases the prognosis, immediate and remote, was bad; treatment as a rule was ineffective, and the induction of abortion or premature labour before the signs of exhaustion became established appeared to be the best line of treatment to adopt.

Case 1.—A 3-gravida, aged 26, had a history of rheumatism and of two previous miscarriages. She was six months pregnant when seen, and had been having severe choreic convulsions for two months. With rest, screening, and occasional doses of chloral and bromide, her condition rapidly cleared up. Normal delivery took place at term, and there were no more choreic fits. The urine was normal throughout.

Case 2.—A primigravida, aged 24, was two months pregnant. She had chorea eighteen months and acute rheumatism twelve months previously, and chorea for the past two weeks, the condition becoming worse in spite of treatment. Pregnancy was terminated, and rapid improvement and cure followed. The urine was normal.

Case 3.—A primigravida, aged 22, was seven months pregnant. She had a history of chorea on and off for four years. Under treatment, with complete rest and silence, potassium bromide and arsenic, the choreic symptoms improved steadily, and she was awaiting the onset of labour. The urine was normal throughout.

It was noteworthy that all three cases gave a history of antecedent rheumatism or chorea; none showed albuminuria or other evidence of toxaemia; none showed any tendency to spontaneous abortion; and the one severe case in which abortion was induced showed almost immediate relief of symptoms.

Mr. E. TENISON COLLINS showed the following specimens: (1) Uterus and both appendages removed from a nullipara, aged 25, for menorrhagia. The uterus was irregularly enlarged, some of the nodules being very soft, and were thought to be possibly sarcomatous. The pathological report stated that only fibrous tissue was present. (2) A large ovarian tumour removed from a woman of 55. The tumour on section showed some cystic spaces and considerable areas of what appeared to be fat. No pathological report was yet available. (3) A bone stilette, which, when passed by a woman to procure abortion, had disappeared inside her. It was located by *x* rays and found free in the pelvis without any evidence of infection or inflammation. (4) A large stone removed by vaginal cystotomy. In spite of the presence of cystitis, the wound had healed uninterruptedly.

Dr. PURSLOW showed a specimen of foetus compressus. The specimen shown had been expelled early in labour, and was followed in due course by a full-term female child. There was a single placenta, the condition being one of homonymous twins.

Dr. RAYNER reported a case of rupture of the uterus during natural delivery. The patient, aged 25, had had two previous normal pregnancies. The pelvis was normal. She had been in labour two hours, when one very strong pain expelled the child, which was dead, with a loop of cord wound tightly round its neck. The placenta was expelled, and the uterus contracted firmly. When left the woman was comfortable, with a pulse rate of 115. An hour later she collapsed, the pulse rate rose to 150, with signs of internal haemorrhage, and free fluid in the flanks, but the uterus was still well retracted. There was free blood in the peritoneal cavity, and a 3-in. tear in the uterus, the right uterine artery being lacerated. These lesions were dealt with by suture and ligature, and she made a good recovery. Dr. Rayner suggested that the cause of rupture in a healthy uterus, as this was, might be violent movements of the child after the birth of the head, and thought that some of those cases diagnosed as *post-partum* shock might in reality be minor degrees of ruptured uterus.

Dr. STRACHAN showed a specimen of anencephaly in which the placenta was attached to the base of the skull by a thick, firm amniotic band, and a small placenta succenturiata was actually adherent to the skull. There was evidence of other amniotic adhesions in the stunted growth of the left hand. Dr. Strachan pointed out the significance of these obvious amniotic adhesions in view of the theory that amniotic adhesions during the early weeks of gestation cramped the growth of the cerebrum, with the ultimate result that the cranial bones did not develop and anencephaly resulted.

Dr. STRACHAN also showed a specimen demonstrating placental apoplexy. The specimen was the uterus and placenta from a woman admitted in the last stages of eclampsia, who died undelivered. There was extensive retroplacental haemorrhage, with obvious bleeding into the placental tissue, and a microscope slide showed haemorrhagic infiltration of the uterine muscle. Retroplacental haemorrhage might cause death by actual excessive loss of blood, or lead to congestion in the separated portion of placenta, and thus to intraplacental haemorrhage. From this necrotic area of placenta toxaemia leading on to eclampsia might develop.

Dr. B. K. TENISON COLLINS showed a specimen of fibromyoma complicating pregnancy. There was a history of two and a half months' amenorrhoea, but the uterus was felt as a hard mobile mass, considerably larger than the period of amenorrhoea, filling the pelvis and rising into the abdomen. Subtotal hysterectomy was performed. The uterus was irregularly enlarged by multiple fibroids and contained a two and a half months' foetus.

HOSPITAL LIGHTING.

A DISCUSSION on hospital lighting took place at a combined meeting of the Illuminating Engineering Society with the Sections of Surgery and Ophthalmology of the Royal Society of Medicine on April 27th. Sir JOHN HERBERT PARSONS, who presided, said that of all the instruments which the surgeon or physician had to use light was the most important and subtle, and its proper quality and direction made all the difference to the observations.

The discussion was opened by Mr. JOHN DARCH, an illuminating engineer, who laid it down as axiomatic that quiet and pleasant ward lighting could best be obtained by combining a system of general with a system of local illumination. The general illumination might be quite small, but it must be well diffused and without glare, while the local lighting should provide each patient with three foot-candles on his book, should be under the patient's or his nurse's control, and should not be in the centre of the bed-head, but 15 in. to the patient's left to avoid heat on the head and gloss on the book. It should also illuminate the chart, and, not to offend anyone else, should be recessed in a dark-green shade. For a night light nothing was more soothing than a quiet, indirect illumination. There should be no gloss above the dado (which should be dark) and the ceilings and friezes should be white. The operating room presented other problems. Here the surgeon was often worried by shadow or glare, and sometimes by uneven or ill-directed light. The ideal light for operating would be in the open under a clouded sky, and that condition should be the aim in artificial lighting. The room should be designed to secure the greatest possible angular expanse of glass without admitting direct sunlight. The ceilings and wall surfaces should be white, smooth, and washable, and a pale-green dado would afford some relief to the eye. Artificial illumination must be abundant—not less than 25 foot-candles—and so thoroughly diffused as to eliminate conflicting shadows. There should be no exposed light sources within the ordinary field of vision, and the colour of the light should be as white as possible. The speaker's own idea was to have the operating theatre quite clear of fittings, and to light the

room entirely from outside the window by clusters of powerful lamps enclosed in waterproof reflectors; nothing was better than the white flame arcs which were used before the war. Provision must be made for emergency lighting, but risks of failure were now so greatly reduced that to cumber the ground with alternative fittings, each one a dust-trap, was not justifiable. It was sufficient precaution to place one half of the lamps on an entirely separate circuit, and to have in another room an accumulator large enough to maintain some powerful hand lamps for several hours. No doubt artificial daylight would be very useful when a suitable lamp of sufficient intensity was forthcoming, but such daylight lamps as were available were too feeble and clumsy for surgical use. Mr. Darch, in closing, put in a word for the dispenser, who frequently had to work under very bad lighting conditions; he suggested that a plain white screen would save him from eyestrain when using graduated glass measures.

In the subsequent discussion Mr. C. C. CHOYCE said that in certain operations, particularly gynaecological ones, it was sometimes an advantage to have two horizontal beams coming one from each side of the sitting operator. He liked the idea of lighting the theatre from outside altogether, but he questioned whether it might not mean additional risk of breakdown. He mentioned that Professor Carrel, of New York, had been working in theatres the walls and floors of which were entirely black, which, he believed, obviated eye-strain. Black was a funereal colour, and probably a dark olive-green would serve the same purpose. Floors should certainly be dark, and walls up to eye-level lighter, and above eye-level perhaps white.

Mr. W. T. HOLMES SPICER pointed out that if the light was generally diffused exact definition was not obtainable. The surgeon needed the shadows to guide him. All glare should be excluded, as well as all reflections—he was speaking of ophthalmic work—except those from the eye under examination. In 1893 he was staying with Professor Snellen, of Utrecht, who had then adopted the principle of operating in an otherwise darkened room, with a window whose separate panes could be uncovered at will, so that he had a beam of light exactly under his control, and Snellen claimed that much acuter vision was possible under those conditions.

A number of engineers also took part in the discussion. One of them urged the advantages of artificial daylight, or at least of an illuminant of constant colour, so as to permit of the proper examination of rashes and other conditions in which colour was important. One or two microscopists also took part, and discussed the best light for the microscope, which it was agreed was light of shorter wave-lengths, although to go too far to the violet end of the spectrum was not consistent with comfortable vision. Mr. C. RAPHAEL criticized indirect lighting, which he considered cheerless and also very expensive. The original installation was more costly than that for direct lighting, and the running costs were very much greater. The "scialytic" lamp and other models for shadowless lighting were demonstrated at the close of the meeting.

A MEETING of the West Kent Medico-Chirurgical Society was held in the Miller General Hospital, Greenwich, on April 21st, when the President, Dr. C. T. T. COMBER, O.B.E., occupied the chair. Dr. MAURICE DAVIDSON showed two cases of encephalitis lethargica in young girls, one of whom was mild and had recovered with the exception of pain in the neck; the other was more severe and showed seventh nerve palsy after eighteen months. Dr. JAMESON showed a young girl with transposition of the thoracic and abdominal viscera. Mr. C. J. S. THOMPSON, M.B.E. (Curator of the Wellcome Historical Museum), delivered a lecture entitled "Parturition chairs, their history and use," which he illustrated by lantern slides. The first was used at Luxor; stools were mentioned in the book of Exodus of the Bible. The chairs usually had a horseshoe-shaped piece cut out of the bottom; later, hand-grips were added, then foot-rests. Leather upholstery of the seat and back came into use. In Cyprus the chair was made of a solid block of wood with two cavities. Chairs were in use in Germany in the seventeenth century. Parturition chairs were still in use in Turkey, Egypt, and Japan. Smellie mentioned their use in this country, and there was also a reference in a play by Ben Jonson, but the lecturer had never been able to discover one in England.

THE next congress of thalasso-therapy, which was to have been held at Venice next October, has been postponed till the spring of 1923, when it will receive the patronage of the King of Italy.

Reviews.

NERVE EXHAUSTION.

SIR MAURICE CRAIG has written a small volume on *Nerve Exhaustion*,[1] designed for the use of the medical practitioner. He has aimed to keep the text as free from technical terms as possible in order that it may be easily understood by those medical men who either have not had the time or have lacked the opportunity to study psychology. Particular stress is laid on the problem of the prevention of nerve exhaustion, and with this end in view much attention is given to the condition of "hypersensitivity," which the author finds constitutes the invariable basis of nervous collapse. This condition manifests itself in both the physical and psychical spheres, and may be inherent, or acquired by an undisciplined or ill-regulated use of the nervous system. If the signs of this hypersensitivity are recognized, either in the child or adult, it is suggested that the graver and more intractable symptoms which follow may be avoided by submitting the patient to a life suitable to his capacities.

A chapter on causation is followed by one on symptomatology. The manifold symptoms of nervous exhaustion are included under the headings of sensation, disorders of perception, including hallucinations, attention, emotion, association of ideas, habit, memory, movement and action, will power and action, impulse, suicide and homicide, jealousy, irritability and suggestibility, conflict and dissociation, including fugues, adaption and regression, anxiety, fatigue and headache, and various bodily symptoms. A survey of this section indicates that the term "nervous exhaustion" is here used in a very general sense; it is made to include a wide range of morbid manifestations, and Sir Maurice Craig evidently does not intend to use the term as synonymous with neurasthenia. A special chapter is devoted to sleeplessness, and the practitioner will find in it a number of useful hints with regard to the treatment of this troublesome symptom. The question as to the use of drugs is fully discussed, but we miss any reference to the treatment of the anxiety state which is often responsible for persistent insomnia.

The section on diagnosis is somewhat scanty, and might usefully be expanded in a future edition. Especially would it seem necessary to remind the practitioner of the possibility of overlooking an early case of general paralysis, as the symptoms in this disorder often closely resemble those of neurasthenia. The author has included in his chapter on treatment some important observations on the lunacy law and the question of certification. Owing to his great experience his views on these questions carry much weight and deserve close consideration. He points out that the treatment of the more severe forms of functional nerve disorder is greatly hampered by legal considerations, and urges a considerable modification of the law as it now stands in order that a number of cases may be treated away from home without the necessity for certification. It is probable that the modifications in the existing law which Sir Maurice Craig advocates will be before long carried into effect, and if not to the extent that he would wish, at any rate sufficiently to remove some of the difficulties which at present prevent the carrying out of adequate treatment in a number of cases.

PROBLEMS OF LEUKAEMIA.

PROFESSOR ELLERMANN'S book on the *Leucosis of Fowls and Leucemia Problems*[2] is of interest because it describes in detail the author's important researches on these diseases of fowls, and discusses the bearing these investigations have upon the leukaemic diseases of man. The word "leucosis" has been proposed because in the fowl there are many different disease complexes due to abnormal production of leucocytes, in some of which no changes are to be found in the peripheral blood. To avoid the use of such expressions as "aleukaemic-leukaemia" or "pseudo-leukaemia" the name "leucosis" is employed to designate all diseases characterized by an excessive production of leucocytes. In the fowl there are three distinct varieties of leucosis—the lymphatic, the myelotic, and the intravascular lymphoid leucosis. In the lymphatic leucosis there is no anaemia and the blood picture is normal, but *post mortem* it is found that the liver is much enlarged and studded

[1] *Nerve Exhaustion.* By Maurice Craig, C.B.E., M.D.Cantab., F.R.C.P. Lond. London: J. and A. Churchill. 1922. (Demy 8vo, pp. 148. 6s. net.)

[2] *The Leucosis of Fowls and Leucemia Problems.* By Vilhelm Ellermann, M.D. London: Gyldendal, 11, Hanover Square. 1922. (Demy 8vo, pp. 105; 3 coloured plates, 8 figures. 7s. 6d. net.)

with white points, and the spleen and kidney enlarged; microscopically hyperplasia of all lymphatic tissue is seen; this disease is essentially a lymphoblastic hyperplasia. In myeloic leucosis, a rapidly fatal infection of fowls, the spleen is relatively more enlarged than the liver, and the bone marrow is greyish-red; microscopically the liver, kidney, and spleen are seen to be infiltrated with myelocytes, and the peripheral blood may contain up to 600,000 leucocytes per c.mm., the majority being myelocytes. The intravascular lymphoid leucosis corresponds more closely to the lymphatic leukaemia of man, and shows a great increase in lymphoidocytes in the circulating blood, together with a mild degree of anaemia.

It was Ellermann and Bang who first, by injecting an emulsion of the organs of an infected fowl into a normal fowl, demonstrated that the leucosis of fowls is communicable. They were able to propagate the infection from generation to generation. In 1908 they concluded, therefore, that the infective agent is an ultramicroscopic filtrable virus; they found that it was possible to transmit the disease in sequence by the injection of a Berkefeld filtrate of a saline emulsion of liver, spleen, and kidney of infected animals.

The diseases of fowls characterized by excessive production of leucocytes show many points of resemblance to the lymphatic and splenomedullary leukaemias of man, and suggest the possibility that human leukaemias may also be due to some hitherto undiscovered infective agent. In support of this there has already accumulated a certain amount of evidence; leukaemia often appears to be endemic, and occasionally cases have occurred in hospitals and other institutions which have suggested communication of an infection. But such a point can only be decided by further researches and the accumulation of clinical evidence. Unquestionably Professor Ellermann and his co-workers have greatly enlarged our knowledge of these obscure blood diseases and opened up many new lines of inquiry. This book will provide interesting and stimulating reading to all who have made a special study of the various human blood diseases.

GYNAECOLOGICAL TEXTBOOKS.

THE early appearance of the second edition of *Diseases of Women*,[3] by Ten Teachers, shows that this book has realized the well-deserved popularity which we anticipated. It is stated to have undergone a careful revision, and the authors are to be congratulated on achieving this and at the same time reducing the size of the volume by a few pages. In part this reduction has been accomplished by condensation of the letterpress, in part by leaving out a number of the illustrations. The process does not seem to have affected the book adversely in any measure, the omitted pictures being not wholly essential to the elucidation of the text. The difficulty of obtaining uniformity in outlook where so many authors are engaged in a collective effort can still be observed, but in our opinion this is less noticeable than it was in the first edition, and, in any case, it is not a shortcoming of real moment. It is unnecessary to notice this volume at any length, as it is a comparatively short time since we had the pleasure of reviewing the first edition, and the changes, so far as we have been able to detect them, are mainly in matters of detail. The book remains an admirably clear, comprehensive, and, withal, simple exposition of gynaecology as it is practised and taught in this country. The student who is reasonably familiar with its contents need have no fear of any examiner in the subject, while the practitioner who has this book in his library will find in it all the information that he is likely to require in connexion with his gynaecological cases. We congratulate the authors, and the publishers also, on the success of a valuable book.

The appearance of the second edition of Professor W. E. FOTHERGILL'S *Manual of Diseases of Women*[4] shows that this work has found its public. As in the first edition, the main points of interest lie in the strictly pathological classification adopted in the description of gynaecological disorders, and in the strongly individual note that runs through all the teaching. Professor Fothergill was one of the pioneers in the introduction of a pathological classification into descriptive gynaecological textbooks, and he must be gratified to see how many of the best textbooks have been modelled upon the same system. At the same time we feel that, when pursued as rigidly as is the case in this manual, the method seems to involve a good deal of repetition, and that some modification of it would make for simplification from the point of view of the student. For the gynaecologist, however, this strict classification has very considerable advantages, and there is no doubt that this feature is, as we have said, one of the main grounds on which the book makes its appeal. Any defects in the method adopted by Professor Fothergill should stimulate other teachers to strive after a better pathological classification.

The fact that many gynaecologists will disagree with the author upon small points makes the book all the more worth reading. It stimulates the reader to challenge views which he may have adopted long since without due examination as to their correctness or otherwise, and may have continued to hold without feeling the need for revising them. Some of Professor Fothergill's refreshingly direct expressions of opinion have this tonic effect. In his preface the author says: "The douche-can and the plug are passing away at last. The pessary is also going; for vaginal surgery has advanced until it is now possible to guarantee a cure in practically every case of genital prolapse without opening the abdomen." All this is correct, but it is not the profound statement which it might appear at first sight to be, nor is it true to the extent which Professor Fothergill would seem to believe or hope. The pessary must always remain for those who, for one reason or other, decline operative treatment, and the can and the plug, however much abused, have also their legitimate and useful sphere (as subsequently described in the author's pages), even if it be only one case out of a hundred in which they are commonly prescribed. Professor Fothergill states that the rôle of radiology in pelvic surgery has hardly reached the textbook stage, and that organo-therapy remains in the journalistic phase but promises to take its place in the books of the future. While not challenging these statements we should have thought that experience in both these domains was now becoming crystallized to an extent which would justify some remarks for the instruction of the student and the guidance of the practitioner. We shall look forward to discussion of these subjects in Professor Fothergill's next edition.

TWO YEARBOOKS OF TREATMENT.

THE *Medical Annual*[5] has now reached its fortieth volume, and there is no sign of decrease in value or interest. Probably no periodical is more widely read by the English family doctor than this, and there is certainly nothing else which in such compact form can keep him abreast of new developments in medicine, whether internal, surgical, or specialized. There is a sanity in this yearly review that soberly appraises innovations. The practitioner may learn from this volume that there are drawbacks to some greatly vaunted remedy, or that some method which he unhesitatingly has regarded as quackery deserves further consideration. Among the newer subjects discussed mention may be made of that of endocrinology by Dr. Langdon Brown, an admirable summary; of neurological surgery (under several headings) by Mrs. Ramsay Hunt; of non-specific protein therapy, in which Dr. Herbert French briefly describes the methods of performing cutaneous tests for food- and pollen-idiosyncrasies, and the desensitization of sufferers by inoculation. There are noteworthy articles, too, on mental diseases by Dr. Stanford Read, and on psychological medicine by Dr. J. A. Hadfield. In a short but instructive survey Mr. Thurstan Holland describes the aid now obtainable from *x* rays in diagnosis, a field in which immense progress has been made since the war. Mr. Hey Groves has written a clear and well-illustrated account of advances in orthopaedic surgery, and a great deal of new work on syphilis is collected and reviewed by Colonel Harrison. We note with satisfaction that the publishers have been able to reduce the price of the book from 25s. to 20s., without interfering with the quality of the paper, the printing, or the illustrations.

[3] *Diseases of Women.* By Ten Teachers. Edited by Comyns Berkeley, H. Russell Andrews, and J. S. Fairbairn. Second edition. London: Edward Arnold and Co. 1922. (Med. 8vo, pp. 641, with 215 figures; 8 coloured plates. 30s. net.)

[4] *Manual of Diseases of Women.* By W. E. Fothergill, M.A., B.Sc., M.D., Professor of Obstetrics and Gynaecology, Victoria University, Manchester. Edinburgh: W. Green and Son, Ltd. 1922. (Demy 8vo, pp. xix + 433; 149 figures. 10s. net.)

[5] *The Medical Annual, 1922.* Bristol: John Wright and Sons. 1922. (Demy 8vo, pp. lxxxvii + 742; illustrated. 20s. net.)

Dr. CHEINISSE, who is responsible for the section of the *Presse Médicale*[6] devoted to therapeutic progress, presents in his yearbook of treatment for 1921 a summary of new suggestions which have appeared during the past year. The scope of the book is much more strictly limited to therapeutic details than is the case in the *Medical Annual*. The French yearbook is a summary of information about drugs and their doses; no mention is made of surgical measures of therapeusis. The arrangement is alphabetical according to diseases. For the most part the novelties in treatment are described in uncritical quotations from the authors' statements, but the references to the original articles are invariably given. A study of the American and English accounts of the treatment of diabetes by fasting has stimulated the editor to one of his most interesting digressions. He states that the method is not new, that it had its origin in France many years ago, and that it has never been more than a palliative which may diminish the gravity of the disease but does not cure it. If, in succeeding volumes, the editor continues to review his subjects critically after this fashion he will add immensely to the real value of the publication. This is only the second year of issue, and such works must necessarily start from small beginnings.

MEDICAL OPHTHALMOLOGY.

MANY years have passed since the publication of the last edition of a book with a somewhat similar title by Gowers and Marcus Gunn, and although that work is a classic and can still be read with advantage by practitioners of medicine and by ophthalmic surgeons, yet there was need for a more up-to-date exposition of the subject; we therefore offer a cordial welcome to the work of FOSTER MOORE,[7] which has recently been published. In his preface the author states that his aim has been "to give a concise account of the pathological conditions of the eyes and their connexions, which, for the most part, are of interest in general medical diseases." Most excellently has he succeeded in his aim; the book is packed with information, and references are given in footnotes on each page, which will be found to be of the greatest value to the reader. For the most part the subject of treatment is excluded.

The changes are described, as a rule, under the headings of the separate diseases, but in Chapter I will be found a very important group of eye signs and symptoms. These are described without special reference to the diseases with which they are connected; for instance, Gordon Holmes's and Lister's work on the cortical representation of vision, papilloedema, nystagmus, retinal haemorrhage in general, bi-nasal hemianopia, indirect paralysis of the cranial nerves, and haemorrhage into the optic nerve sheath. Especially good are the chapters on arterio-sclerosis, the anaemias, and renal retinitis, fields in which the author has done a great deal of valuable work; but the whole book is excellent, and as an instance of the sane way in which it is written we would commend the remarks on the question of small errors of refraction as a cause for epilepsy and migraine.

In our opinion this book is one of the most useful to the physician and to the ophthalmic surgeon alike that has appeared in this country in recent years. The printing and paper are good, the illustrations admirably illustrate the text, there is a very full index, both of subjects and of authors, and the typographical errors are very few.

THE HYGIENE OF THE SCHOOL CHILD.

WE are familiar with books on the hygiene of the child written by members of our own profession, but we have received recently a volume written by a layman, LEWIS M. TERMAN, Associate Professor of Education of the Leland Stanford Junior University,[8] and designed for use in normal schools, colleges, and teachers' reading circles. It is a well-balanced statement of the conditions of health, and the effects, mental and physical, likely to follow departures from those conditions. With an essentially practical outlook upon health, the author begins by a statistical statement of the values of humanity and the lost values of the dead, which is a striking commentary on the economy of efficient public health services. He computes, or cites computations of, the values of the individual in dollars, and these values translated into pounds sterling at pre-war rates of exchange read as follows: It is computed that the new-born child has an average money value of at least £20. The value increases to £200 by five years, to £300 by twenty years, and drops again to £600 by fifty years. The minimum average loss to society from each postponable death has been elaborately calculated at £300. It is estimated that of the 1,500,000 deaths in the United States each year at least 42 per cent. (600,000) are postponable. The annual loss from this cause is therefore £200,000,000. The loss from preventable illness is calculated at £400,000,000 per annum, or four times the total expenditure on public education. Much of this loss is due to sheer ignorance.

> "The daring researches of a few score bacteriologists are more than offset by the thousands of people who still use liverwort for jaundice because of the fancied resemblance of its leaf to the human liver; by tens of thousands who treat infectious diseases by suggestion; by the millions who spend hard-earned money for patented consumption cures. Popular notions regarding personal hygiene are little better than a seething welter of ignorance and superstition, not all of which is confined to those who are confessedly uneducated."

If this had been written by a physician the layman would have remarked that the physician was exalting his office.

The book is divided into chapters, dealing with the physical basis of education; the general laws of growth and factors of influence; physiological differences between children and adults; physiological age; disorders of growth; malnutrition; tuberculosis; ventilation; teeth; nose and throat; hearing; vision; headache in school children; mental hygiene; speech defects; sleep; and some of the evils of school life. Nearly all are very well written and show an understanding of the practical application of medicine to school medical inspection. To each chapter is appended a list of references to original papers or books recommended for consultation. In the last chapter there are some well-considered cautionary remarks on the effects of school life.

> "There is reason to believe that the intellectual apathy of older children and adults is sometimes due to school over-dosage, or to other kinds of educational malpractice. It has often been charged that the school has a depressing effect upon a child's spontaneity; that it mechanizes his mental processes, and destroys the individualistic elements in his personality."

Attempts have been made to measure this depressing effect by observations of spontaneously controlled drawings. Fortunately the exuberance of vitality is so marked a characteristic of childhood and youth that many escape without observable injury. Nor are the evils which do exist beyond remedy. There is no reason why the school should not be as healthful in its influence upon both body and mind as the most perfectly ordered home. Until it approximates to this ideal, the campaign for school reform should continue. The book is well written, and will be of value to English readers as well as to those for whom it was designed.

SEROLOGY.

IN a volume of less than three hundred pages on the groundwork of serology ASCOLI states clearly the chief facts of that department of science, and in the translation into German which Dr. R. S. HOFFMANN[9] has made the reader's time is saved by the liberal use of marginal headings. After tracing the history of serology in an initial chapter, theories of immunity are discussed in detail. An account of the chief antitoxic and antibacterial serums is next given, and this is followed by a description of the best known antibodies. Complement-fixation has a chapter to itself, as also has the sero-diagnosis of syphilis. The meiostagmin reaction for the diagnosis of malignant disease is described, as well as Abderhalden's procedure for the same purpose. In a final chapter the main facts of anaphylaxis are enumerated.

This book is an excellent compendium of current Continental teaching on the subject of immunity, and may be recommended to those requiring a work of that kind. The authors, however, have but little to say about the Schick test, in connexion with diphtheria outbreaks; furthermore, recent work

[6] *L'Année Thérapeutique*. By L. Cheinisse. Second year, 1921. Paris: Masson et Cie. 1912. (Post 8vo, pp. 1:2. Fr. 6 net.)

[7] *Medical Ophthalmology*. By R. Foster Moore, O.B.E., M.A., B.Ch. Cantab., F.R.C.S. London: J. and A. Churchill. 1922. (Demy 8vo, pp. viii + 300; 80 figures. 15s. net.)

[8] *The Hygiene of the School Child*. By Lewis M. Terman, Associate Professor of Education, Leland Stanford Junior University. London: George G. Harrap and Co. 1922. (Cr. 8vo, pp. 417; 33 figures, 9 plates. 10s. 6d. net.)

[9] *Grundriss der Serologie*. By Dr. A. Ascoli. Translated into German by Dr. R. S. Hoffmann. Third edition. Vienna and Leipzig: J. Safár. 1921. (Med. 8vo, pp. 272; 29 figures, 8 plates. M.32; bound, M.66.)

on the serological types of pneumococcus and meningococcus is ignored, as also is Dreyer's technique for applying the agglutination test. Doubtless reference to these matters, and also to the recent work of Dale on anaphylaxis, will be made in future editions of a work that claims to cover the groundwork of serological science.

NOTES ON BOOKS.

THE third edition of the late Professor L. DONCASTER'S *Heredity in the Light of Recent Research*[10] was not completely revised at the time of this brilliant worker's lamented death; the additions rendered desirable by the labours of Professor Morgan and his school with regard to hereditary transmission, and intended to be summarized in an appendix, have not been made. Since the second edition in 1912 the progress of knowledge has rendered necessary some modification and additions to the chapters dealing with the inheritance of acquired characters, heredity in man, and heredity in sex. An interesting discussion showing the fallacies attending some of the experiments made in connexion with the subject leads to the conclusion that, though the hypothesis of the inheritance must be regarded as non-proven, recent evidence makes a dogmatic denial of its possibility inadvisable. The widely held belief in maternal impressions is shown to have no firmer foundation than accidental coincidence. The chapter devoted to heredity in man deals in an interesting and clear manner with the transmitted liability to tuberculosis, insanity, and other conditions. This small book contains much to satisfy the medical man's desire for knowledge on this important and advancing subject.

Many are the methods that have been devised to popularize a study of hygiene and to simplify for the general public the laws of health. That of Sir ROBERT FIRTH, by means of a small fourteen-page folder, is excellent, and in *Health in a Few Words*[11] he has succeeded in setting forth in simple language that which ought to be known by everyone who desires to keep in good health. The various sections of the leaflet deal with the dwelling, air, water, food, personal hygiene, infantile mortality, infection, and disinfection. That upon personal hygiene is particularly clear and concise. It hardly seems possible to have put into 350 words so much valuable information as this section contains. Public health officers ought to find the judicious distribution of this leaflet of great assistance to them.

The *Medical Record* of New York, which has been appearing as a weekly periodical for the last fifty-six years, has ceased to exist as a separate publication; it has been combined with the *New York Medical Journal*, which appears semi-monthly. For the first thirty-eight years the *Medical Record* was edited by Dr. George F. Shrady; he was succeeded by his assistant, Dr. Thomas L. Stedman. The periodical was published throughout the whole of its career by the firm of William Wood and Company, which has been engaged in medical publication for 118 years.

[10] *Heredity in the Light of Recent Research*. By the late L. Doncaster, Sc.D., F.R.S., Derby Professor of Zoology, Liverpool University. Third edition. The Cambridge Manuals of Science and Literature, No. 2, Cambridge, 1921. (Pp. 163; 13 figures. 4s.)

[11] *Health in Few Words*. By R. H. Firth, D.P.H., F.R.C.S. London: John Bale, Sons, and Danielsson, Ltd. 1921. (3 × 4½, pp. 14. 2d.; post free, 3d.)

THE OPIUM COMMISSION OF THE LEAGUE OF NATIONS.

[FROM A CORRESPONDENT AT GENEVA.]

THE Advisory Commission of the League of Nations with regard to the traffic in opium and dangerous drugs began its second session in Geneva on April 19th. It was expected that the business might be finished in three days, but owing to difficulties arising from the recrudescence of opium cultivation in China the sittings continued for more than a week. The Chairman was Sir Malcolm Delevingne, of the Home Office, who was the British representative. The representative of France, M. Bourgeois, occupied the vice-chair, and the other countries represented were Germany, the Netherlands, Portugal, India, China, Japan, and Siam. This was the first appearance of Germany at a council table of the League of Nations, and the representative of that country, Dr. Anselmino, evidently felt himself in a position of difficulty. Germany was invited to sit on the Opium Commission chiefly on account of that country's interest in the manufacture of drugs, but Germany is not yet a member of the League of Nations, and therefore its representative abstained from voting, and took only a slight part in the discussion. In addition to the accredited representatives from the nine countries there were three assessors—namely, Sir John Jordan, lately British Minister Plenipotentiary in Peking, Mrs. Hamilton Wright (United States), and M. Brenier (France).

More than two days were spent in a discussion on the Chinese problem. At the first session of the Commission last year the Chinese Government undertook to appoint commissioners who should tour the provinces and report upon any recrudescence of opium cultivation. When the Chinese representative on this occasion, Mr. Chao-Hsin Chu, produced the promised reports it was found that they were of a very untrustworthy character. In many cases the investigation had been made at a time of year when, at any rate in a rapid tour over the vast areas involved, it was not possible to detect a poppy crop. The poppy flowers in March and April; yet, in quite a Gilbertian manner, the investigations appeared to have taken place mostly in October and November. The optimistic statements of these Chinese commissioners were at variance with more authentic information from unbiased sources, and Mr. Chu admitted that much of his information was unsatisfactory. He persistently refused, however, every suggestion of interference, even in the most helpful spirit, by the League of Nations, contending that the opium question was not a China question but an international question, and that no special action must be taken with regard to China which was not taken with regard to other opium-producing countries. To arrive at some compromise which should not hurt the susceptibilities of China, and yet should restrain the undoubted recrudescence of poppy cultivation in that disturbed country during the last five years, taxed all the wit of the Commission, and the situation was made more piquant because the Japanese representative, who admitted that there had been an extensive importation of drugs into his country beyond all legitimate requirements, professed himself most anxious that the League should undertake investigations into the measures by which the Japanese Government is now combating the illicit traffic.

The principal piece of work which the Commission has done is to set up a system of importation certificates under which, if a dealer in dangerous drugs in one country desires to import such drugs from another country, he must obtain from his own Government a certificate of approval for each consignment, together with the statement that, in the case of raw opium, it is required for legitimate purposes, and, in the case of morphine, heroin, cocaine, or medicinal opium, that it is required solely for medicinal or scientific purposes. The use of the words "legitimate" with regard to opium and of "medicinal or scientific" with regard to prepared drugs is a compromise arrived at chiefly to meet the position of India. The Government of the exporting country will not issue its licence until the certificate from the Government of the importing country has been received. If this recommendation is adopted by the Council of the League this month it will come into force for Europe and America next September, and for the Far East and Australasia next January. The Commission itself is only an advisory body.

One sitting of the Commission was devoted to exploring what might be considered the maximum legitimate consumption of dangerous drugs. A report prepared by Sir George Buchanan and Dr. Carrière, of Switzerland, was presented, which described certain investigations in a few civilized countries, relatively small in population, and in which there was little or no material abuse of the drugs, or, if there was such abuse, means existed for determining with reasonable accuracy the extent of the proper medicinal use. The countries originally selected for this purpose were Belgium, Switzerland, the Scandinavian countries, and Australia and New Zealand. No useful figures are yet to hand with regard to the two last, and as for Belgium, in view of new legislation and administrative measures there, it is considered that more useful information may be obtained at a somewhat later date. In Switzerland Dr. Carrière has sought the co-operation of doctors, pharmacists, and the hospitals, and has arrived at figures representing within a margin of 20 per cent. what he believes to be the total legitimate consumption, and similar inquiries have been carried out in Denmark and in Sweden by Dr. Madsen. The year to which the following figures (see table, p. 725) relate is, in the case of Switzerland, 1921, in Sweden, 1920, and in Denmark, 1917.

The considerable consumption of heroin in Switzerland appears to have no counterpart in Scandinavian countries: in Sweden the amount of heroin consumed was only two kilograms. It will be seen also that the consumption of cocaine

	Total Quantity in kilograms.	Per Head of Population (grams).
SWITZERLAND.		
Opium and preparations and extracts	704	0.17
Morphine	234	0.058
Heroin	174	0.043
Cocaine	229	0.057
SWEDEN.		
Opium	1,600	0.27
Morphine	120	0.02
Cocaine	150	0.025
DENMARK.		
Opium	467	0.16
Morphine	98	0.033
Cocaine	48	0.016

is more than twice as great per head of population in Switzerland as in Sweden, and more than three times as great as in Denmark. These three countries can be properly compared because all are small countries, all were neutral in the war, and all have a relatively high standard of health; the annual mortality rate in Switzerland is 14 per 1000, in Sweden 13.29, and in Denmark 13.4.

Dr. F. Norman White, who occupies an official position on the International Health Committee of the League, was present at this sitting of the Opium Commission, and amplified Dr. Carrière's report. He said that the investigators who had carried out the task in Switzerland were impressed by the great difficulty of undertaking any similar inquiry in a larger country. The difficult question was to decide as to the limits of legitimate use. If it was said that all opium prescribed by a doctor was legitimate, it must be remembered that, at any rate in some countries, these drugs might be abused by the medical profession. Moreover, even among practitioners in countries where there was a high standard of medical qualification, great diversity of opinion existed as to the use of these drugs. Some doctors used them too much, other perhaps not enough. One of the members of the Commission asked to what extent Dr. White thought that the results arrived at for European countries might be safely applied to oriental countries like India, where racial characteristics, habits of life, and incidence of disease were all different. Dr. White replied that in western countries it might be assumed that the use of a drug was legitimate if it was prescribed by a doctor, but in such a country as India it was necessary to define, not merely legitimate use, but also the doctor. He had known native practitioners in India who used opium very skilfully in the treatment of disease, but according to western standards their use of the drug would be regarded as illegitimate. He agreed that there was much greater tolerance for narcotic drugs amongst the Indian native population than amongst Europeans. The representative of India on the Commission, Mr. Campbell, stated that the average annual consumption of opium in all forms among the population of 240,000,000 of British India was between 26 and 27 grains a head. If cocaine were taken as equivalent to morphine, and both morphine and cocaine as equivalent to ten times the quantity of opium, the consumption in Denmark would represent about 10½ grains of opium a head, or about 40 per cent. of the consumption in India.

Discussion took place on the wisdom of encouraging the use of synthetic drugs which, while possessing the same medicinal value as morphine or cocaine, were less likely to form the drug habit. Dr. White believed that the new synthetic drugs led to nothing corresponding to the cocaine habit. There were instances of perversity, of course, but these needed no special legislation any more than the fact that now and again an alcoholic subject became maniacal on eau-de-Cologne was a reason for special legislation against that spirit. He regarded eucaine, from the habit-forming point of view, as not one-hundredth part as dangerous as cocaine; it did not give rise to those so-called pleasurable sensations which were the root of the mischief. The German representative said that in his country research was being directed to the replacement of habit-forming drugs by others, approximately equal in medicinal value, which were not injurious. It was understood that the Health Commission of the League of Nations would get in touch with the German Government on this matter. Dr. White demurred to a suggestion from Mrs. Hamilton Wright that legislation should be introduced to prevent or limit the medical use of drugs. He did not think that medical initiative should be bound in that way. There were certain cases in which he, were he a practising physician, would be very sorry not to have opium at his command, and he believed that many doctors did not use it enough. He was pressed by some members of the Commission to suggest a figure for consumption per head of population which might represent the utmost limit of legitimate use, so that if it were exceeded in any country suspicion would be aroused. In reply he pointed out the difficulty of expressing the potency of one drug in terms of another, and also the fact that a relatively high figure for a given country—as in the present case of Switzerland compared with Denmark—might simply mean that the statistics had been collected more carefully. A figure which should serve as a danger signal could only be arrived at as the result of an inquiry extending over several years and concerned with a number of countries.

It was reported by Britain, America, Germany, Holland, and Japan that information could and would be obtained in those countries as to the manufacture and sale of cocaine and the purposes for which the drug was produced, and the Secretariat of the League was instructed to stimulate such inquiries and correlate the results.

SIR THOMAS BROWNE:

THE STORY OF HIS SKULL, HIS WIG, AND HIS COFFIN PLATE.

BY

REV. CANON F. J. MEYRICK,

ST. PETER MANCROFT VICARAGE, NORWICH.

A PATHETIC irony seems to follow the great author of the *Religio Medici*, *Urn Burial*, and *Vulgar Errors*, even beyond the grave.

"To be knav'd out of our graves, to have our scu'ls made drinking bowls and our bones turned into pipes . . . are tragicall abominations escaped by burning burials."

The writer of these words suffered at least a part of a "tragicall abomination," for his skull, though never "made into a drinking bowl," was almost certainly "knav'd" out of his grave. In the chancel of the great Church of St. Peter Mancroft, Norwich, is a tablet which tells us that—

"Near to the foot of this pillar lies Sir Thomas Browne Knight and Doctor in Physick, the author of Religio Medici and other learned Bookes, who practis'd Physick in ye City 46 years and died Oct 19 1682 in ye 77th year of his Age," etc., etc.

The story of the "knaving" is, and must always be, wrapt in some mystery. This much is known. In 1840 the aged incumbent, the Rev. John Bowman, was mourning the loss of his wife. A grave was being prepared for her in the chancel of the church. A local antiquary, whose "acquisitive complex" was abnormally developed even for an antiquary, took from the coffin of Sir Thomas Browne the coffin plate, which was broken when forced from the lead coffin. Though he strenuously denied the theft and declared the coffin plate was in the possession of the sexton, yet in 1893, fifty-three years later, the broken plate was found in his desk among his acquired treasures and rightly returned by his executors to the church from whence he had borrowed it.

The coffin plate, which is now restored, is carefully preserved by the church authorities as near as is convenient to its original resting place. It is in the form of an heraldic escutcheon measuring 7 in. by 6 in., and broken into two nearly equal halves. On it are engraved remarkable words, of which Sir Thomas's eldest son, Edward Browne, was the author. Edward, like his father, was a ripe scholar and a great traveller. He was the author of an extraordinarily interesting book of travels in divers parts of Europe, "printed for Benj. Tooke, at the Sign of the *Ship* in St. Paul's Churchyard MDCLXXXV." He had the reputation of being the best bred man of Charles II's Court, was President of the College of Physicians, and physician to St. Bartholomew's Hospital. The words read as follows:

"Hoc loculo indormiens corporis spagyrici pulvere plumbum in aurum convertit" ["Sleeping in this grave, by the dust of his alchemic body he changes the lead to gold"].

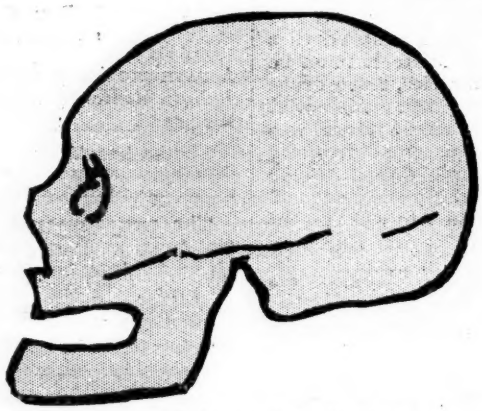
The acquisitive antiquary who claimed to have looked into the coffin declared that the lead of the coffin had actually decomposed and changed to carbonate which crumbled at the touch. However, as we have seen, little reliance can be set upon the witness of this man. This same antiquary

declared in 1847 that seven years before, looking into the coffin, he saw not only the skull but also the hair of Sir Thomas Browne, and he described the hair as "profuse and perfect and of a fine auburn colour."

Meanwhile, in 1845, a skull had been presented to the hospital as that of Sir Thomas Browne. Unfortunately there is no record of the gift in the hospital books. Since 1845 the skull and some hair have been preserved in the hospital museum, of late years in a silver casket, presented by the late Professor Osler, perhaps the greatest authority in his day on Sir Thomas and his writings.

Many questions have been asked about the skull. No one knows who stole it or by what means it reached a certain Dr. Lubbock, who is said to be the donor of the relic to the hospital. It has been suggested, without a shadow of evidence, that the sexton stole the skull, hawked it about Norwich, and finally sold it to Dr. Lubbock. Now the sexton in 1840, when the grave was "knav'd," was a most worthy and loyal servant of the church. His son followed him, and his grandson, a great lover of Sir Thomas, is serving the church to-day. The sexton of 1840 was a man of considerable means, for he could afford to present the church that he served with such fidelity with a beautiful oak door.

Did the antiquary, who was the only man who claimed to have seen the skull and who most certainly "borrowed" the coffin plate, also "borrow," with or without the churchwardens' consent, the skull? It looks like it. Yet in dealing with relics, it is wise to walk warily. Did the antiquary really look into the grave? The story of the thick head of hair is not very convincing. For is it possible that a man who lived to 77 and who for forty years was responsible for a great practice should have died with a head covered with profuse auburn hair? There are many possibilities. It is possible that Sir Thomas was buried in his wig. It is possible, on the other hand, that the antiquary, satisfied with the coffin plate, never looked into the coffin at all. It is even possible, though unlikely, that the faithful old sexton with dry humour palmed off another skull (in 1840 the crypts were choked with them) on to the greedy antiquary.



Rough tracing showing the skull with its low and depressed forehead.

Clearly we must walk warily. Orthodoxy and dogma are dangerous in matters relating to relics. The great philosopher's own words (*Pseudodoxia Epidemica*, Chapter V) warn us of the danger of credulity:

> "A third cause of common Errors, is the Credulity of men, that is, an easie assent to what is obtruded; or a believing at first ear, what is delivered by others. This is a weakness in the understanding, without examination assenting unto things, which from their Names and Causes do carry persuasion; whereby men often swallow falsities for truths, dubiosities for certainties, sensibilities for possibilities, and things impossible, as possibilities themselves. Which, though a weakness of the Intellect, and most discoverable in vulgar heads; yet hath it sometimes fallen upon wiser brains, and great advancers of Truth."

And this cause of error, the philosopher tells us, is supinity or neglect of inquiry, "rather believing than going to see; or doubting with ease and gratis, than believing with difficulty and purchase."

Let us therefore "go to see." In the museum of the hospital there is the skull. At first sight, with little or no knowledge of craniology, we would say: This cannot possibly be the skull of Sir Thomas Browne—that low, receding, depressed forehead is never that behind which the *Religio Medici* was conceived.

We look elsewhere for evidence of the shape of the philosopher's head. There are, fortunately, no less than four contemporary portraits. There is one in the treasury of St. Peter Mancroft—a half-length, three-quarter face. The portrait was presented to the church by Dr. Edward Howman, who owned and occupied Sir Thomas Browne's house after the philosopher's death. A second portrait is in the Bodleian Library—also a half-length and three-quarter face, and was probably painted in 1671 or 1672, just after Sir Thomas had been knighted. A third portrait is in the Royal College of Physicians, London, and represents Sir Thomas as somewhat older than in the other two pictures.

In all three pictures, though there are differences in cast of countenance and in details of dress, you see a noble face of a man of over sixty. There is a touch of melancholy in each face, and each picture represents a man who, so far from having the straitened forehead of the fool, rejoiced in the noble, intellectual forehead of a scholar. This is what one would expect, unless one had been to the museum and seen the skull.

There is a fourth and less well known portrait. It is at Devonshire House, Piccadilly, and some years ago the Duke of Devonshire kindly allowed it to be photographed and published in Norwich. It is probably the work of Van Somer, a Dutch artist who came to England in 1606. It represents the Browne family when Thomas was a few years old. Thomas Browne, mercer of London, and Anne his wife, are with their four children, Anne, Jane, Mary, and the future Sir Thomas. Even at this early age Thomas has a high forehead, the child's eyes being actually nearer the point (if a child's chin has a point!) of the chin than the top of the forehead.

Another possibility has been suggested. Dr. Beverley, a great collector of all that concerns Sir Thomas, sends me a copy of a MS. in the British Museum. It reads as follows and throws a new possibility on the skull's authenticity:

> "The late Dr. Jeffery gave notice to Sir Thomas Browne's nearest relative that his vault wanted Reparation, who sent him word it might be filled up, which when the Dr. knew, desired that he might be interr'd thereon, who shortly after Dying His corpse was deposited in the Vault and afterwards filled up with earth and over the Doctor on a stone is this Ins: Johannis Jeffery, S.T.P., etc. etc. 1720 anno aet. suae 73."

From this we learn that soon after the burial of Sir Thomas Browne in 1682 his vault was filled up with soil, and that in 1720 the grave was opened, and over the coffin of Sir Thomas Browne was laid the body of Dr. Jeffery. This John Jeffery was vicar, or, as he was then called, minister, of St. Peter Mancroft, for forty-two years, from 1678 to 1720. He was appointed Archdeacon of Norwich in 1694. Sir Thomas Browne, who lived hardly a stone's throw from this church, was for four years not only his greatest parishioner but his greatest friend. It has been suggested that when in 1840 the gravediggers disturbed the "filled-up" vault of Sir Thomas they must have first come upon the skeleton of John Jeffery, and that therefore the low, depressed skull is that of the archdeacon and not the philosopher. A picture of the archdeacon disposes of this possibility. The vicar was even more noble-browed than his great parishioner!

At first sight the conclusion drawn from the skull and the portraits seems almost irresistible. For could such a skull boast a brow so nobly shaped? Yet we know that artists are necessarily idealists. Portraits were in quite early times types rather than likenesses. Even when they became likenesses, something typical remained. In Caroline days may it not have been the fashion to give eminent men the high forehead that we see in Van Dyck's Charles I in the Wallace Collection, or in his Henrietta Maria in the National Portrait Gallery?

On the whole we believe, then, the tradition is true that the antiquary knew what he was doing when he rifled the grave and "knav'd" the skull, and that the governors of the Norfolk and Norwich Hospital have been guarding the great man's skull for nearly eighty years. The unbroken tradition in the sexton's family carries great weight. The Potters for four generations have all been faithful servants of the church, and the present verger, Mr. Douro Potter, is entirely convinced that the skull which the hospital authorities are returning to the church is the skull that held the brain that gave birth to the *Religio Medici*.

If a great scholar—Dr. E. Browne—wrote the Latin inscription on the coffin plate in 1682, another great scholar—Dr. Pollock, Bishop of Norwich—has in 1922 written that which is to mark the spot in the chancel of St. Peter Mancroft where the skull will lie. It is as follows:

> O caput augustum, Petro custode sepulchri
> Sit tibi pax; nomen vivat in urbe; vale.

British Medical Journal.

SATURDAY, MAY 6TH, 1922.

THE MEDICAL CURRICULUM.

EVERY extension of our knowledge, every additional appreciation of the influence and effect of disease, has its natural corollary in a demand for revision of the curriculum. Although a wise conservatism has been the order of the day, a time has periodically come when the demands could no longer be legitimately or even safely denied. Such a time had arrived immediately prior to the outbreak of the war, and, although postponement of their consideration was thereby rendered necessary, further investigation and discussion have only confirmed and emphasized their justice and urgency. The firstfruits of the deliberations—which were resumed so soon as the war had ended—are to be seen in the provisional Regulations recently published by the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England. The Regulations are designed to come into effect at the beginning of next year; should they do so—and this would appear to be contingent on the acceptance of the General Medical Council's recommendations by other examining bodies—they will apply to candidates who have not passed the required preliminary examination in general education before January 1st, 1923. This seems rather short notice, but we may say at once that the reforms suggested are such as almost unreservedly to command approval. In the main they are the lengthening of the curriculum, the recognition of the importance of pathology and bacteriology, which are to be the subjects of a separate examination, and the requirement of attendance at ante-natal, infant welfare, and other clinics.

The lengthening of the curriculum is attained by removing the subjects of chemistry and physics into a pre-medical curriculum, in accordance with what we believe to be a generally accepted proposition that a knowledge of these two subjects should be required from any senior pupil, at a public or secondary school, who is intending to adopt a scientific career. There are not wanting signs that such schools are both willing and anxious to provide the instruction required. By the adoption of this measure almost a complete academic year is added to the medical curriculum, for, although it is proposed that general biology shall still be retained, it appears only as an addendum to physiology, and is no longer made a subject for examination; this alteration in its position seems to be only preliminary to its disappearance as a separate subject from the curriculum of the Royal Colleges. If this be the case, we are of opinion that it would be kinder to remove it altogether than to leave it in so ambiguous a place. Biology can never be wholly eliminated from the medical curriculum, since it is required in connexion with the study of so many subjects—embryology, experimental physiology, parasitology, and bacteriology. We hold, however, that the subject is so vast that only parts of it can ever be studied by the medical student, and that these parts can be most intelligently and satisfactorily taken at a later period of the curriculum, when a knowledge of the facts and principles of human anatomy and physiology has already been acquired. Biology, in other words, should be taught in terms of comparative anatomy and physiology rather than in terms of pure science, and may profitably be left to the teachers of anatomy, physiology, pathology, and bacteriology to be supplied at the appropriate times.

The First Professional Examination is divided into two parts. The subjects of Part I are Anatomy, including histology and embryology, and Physiology, including biochemistry. The introduction of embryology, the allocation of histology to anatomy, and the separate recognition of biochemistry are all innovations in keeping with the spirit and trend of the times. The examination in embryology will be according to a schedule, the details of which are not given, although from the known practical character of the examinations at the Royal Colleges we may presume it will include the general principles of embryology and have special reference to congenital anomalies. The subjects of Part II are Pharmacology, Practical Pharmacy, and Materia Medica. Five terms, or two winters and a summer, are the periods of study prescribed in preparation for this examination, periods which differ little, if at all, from those of the older regulations and which are identical with periods required by most universities, including the University of London. We are sorry to observe that a candidate is to be allowed to pass the examination in anatomy or physiology separately provided a standard of 25 per cent. is attained at the examination in the other subject. We believe this to be a mistake in more ways than one; moreover, as a student is not allowed to proceed with the work for the final examination until he has passed the whole of Part I of the first examination, the concession appears to be of dubious value. We trust further consideration will be given to this matter before the regulations reach their final form.

The Final Examination is divided into two sections. The subjects of Section I are Pathology, including morbid anatomy, morbid histology and clinical pathology, and Bacteriology; all these subjects must be passed by a candidate at one and the same time. The subjects of Section II are Medicine, Surgery, Midwifery, and Gynaecology, and they may be taken by a candidate, as at present, separately or together. The institution of a separate examination in pathology and bacteriology is, we think, from the educational point of view, the most important change in the Regulations, and will go far to redress the balance between the clinical and scientific sides of the final examination. The curriculum for Section II of the Final Examination has been extended to include courses in diseases of children and in the care of infants, in diseases of the throat, nose and ear, in diseases of the skin, in venereal diseases, in radiology, and in mechano-therapeutics. Candidates are to be required to produce evidence that they themselves have performed *post-mortem* examinations; that they have attended ante-natal clinics, have attended five labours conducted by a teacher or member of the staff of an approved hospital, and have themselves conducted fifteen other labours. The intention of these Regulations is sufficiently obvious; it is to give a more systematic and practical training in what have been the more obscure, but what are from the point of view of prevention of disease certain of the most important, branches of medicine. Attendance at courses of lectures on medicine, surgery, and midwifery is, we notice, no longer required, but the somewhat wasteful procedure, from the point of view of time, of attendance at a vaccination station is retained, although we should imagine an adequate course of instruction could readily be arranged in the sero-therapy department of any of the larger hospitals.

The broad general purpose of the changes, it will be seen, is, while retaining the strongly practical character which has always been the feature of the Conjoint Board examinations, to take the opportunity afforded by the extension of the curriculum to strengthen the more purely scientific side, and at the same time to widen the bounds of the curriculum in conformity with the progress of knowledge. The time chosen for the changes is far from being inopportune, coinciding as it does with an

epoch in which great advances have been made in medicine, and with a time at which the large entry of medical students into the schools has made a more severe type of curriculum both possible and desirable. It will further be noted that if the pre-medical curriculum is completed at school there should be little, if any, addition to the cost to the student of his training.

A new and high standard of medical qualification has now been set by the Conjoint Board in England; it cannot but affect the attitude of other examining bodies and must eventually have a great and far-reaching influence on medical education, and through that on the profession as a whole. Not for the first time has the wise statesmanship of the Royal Colleges been exercised to the benefit of the profession, but never, we think, to greater or more salutary effect.

RENAL EFFICIENCY TESTS.

MUCH attention has been directed during the past year to the subject of renal function and the clinical tests by means of which the efficiency of the kidneys may be estimated. The subject was made the text of an extremely interesting discussion that took place at a combined meeting of the Section of Medicine, the Section of Pathology and Bacteriology, and the Section of Physiology, Pharmacology, Therapeutics, and Dietetics, held at Newcastle during the Annual Meeting of the British Medical Association last year.[1] It has also been extensively debated by physicians, pathologists, and genito-urinary surgeons at the recent meetings of the Urological Section of the Royal Society of Medicine. The conclusions arrived at as a result of these discussions should for more than one reason be of great interest to the profession.

Renal efficiency is a most important topic, and on this score alone merits the attention of physicians and surgeons alike. But that which lends even greater interest to the investigation of renal functions is the fact that it has afforded a common ground for the meeting together and exchanging of ideas between representatives of so many and such diverse branches of medical science and practice. In these days of intense specialization there is a tendency for the worker in one department of medicine to lose touch with his fellow in another department, and undoubtedly much valuable knowledge is incompletely utilized from lack of liaison between the various branches of the profession. By the organization of these discussions on renal function among physicians, physiologists, pathologists, and genito-urinary surgeons the British Medical Association and the Section of Urology of the Royal Society of Medicine have done excellent service to medicine as a whole.

One result of these meetings has been to emphasize the fact that a test of renal efficiency, if it is to be of any real value, must be capable of simple and rapid performance. The number of tests that have from time to time been suggested is already too great. What is required is a simple test, or combination of tests, which will give the necessary information without the need for employing elaborate apparatus or complicated analyses. In the present stage of knowledge a careful clinical examination of the patient, reinforced by the carrying out of a few simple tests, will furnish an estimate of the functional value of the kidneys more accurate than that to be attained by the performance of numerous and complicated laboratory analyses. The time has not yet arrived for the employment of abstruse mathematical formulae and constants. Much new knowledge will have to be gathered before the functional value and (what is still more necessary) the functional reserve power of a kidney can be stated in figures. In the meanwhile reliance must be placed chiefly on the clinical examination, and on the results of such simple tests as the estimation of the blood urea, the determination of urea concentration as carried out by Professor Hugh Maclean, and the tests of the kidney's power to excrete dyes. Although a certain divergence of view is, not unnaturally, noticeable on this last point, the trend of recent opinion seems to support the use of the dye tests in estimating renal efficiency. Whilst it is true that we have no scientific proof that there is a parallelism between the excretion of a dye and the excretion of the products of nitrogenous metabolism, there nevertheless exists a weight of clinical experience in favour of the use of such simple procedures as the indigo-carmine and phenolsulphonephthalein tests. Of these two, the former appears to have gained the greater favour. Its popularity amongst speakers at the meeting of the Section of Urology of the Royal Society of Medicine would seem to depend not only on its simplicity but also on the accuracy of the results obtained. More especially would the indigo-carmine test appear to be of use in those cases in which it is necessary to estimate the relative value of a kidney as compared with its fellow on the opposite side. In the experience of several speakers an appreciable delay in the appearance of the dye at the ureteric orifice had been noted in cases in which the renal lesion was comparatively trivial.

Although it is difficult to sum up in a few words the conclusions arrived at as the outcome of these debates, and although it must be conceded that considerable discrepancies occurred in the experiences of some of the speakers, a very definite common factor of agreement undoubtedly existed. Emphasis was laid generally on the fact that a renal efficiency test, however valuable it may be, is only one of the means at our disposal for arriving at a conclusion as to the functional value of a kidney, and that its importance in relation to that of the clinical examination must never be overestimated. With regard to the nature of the tests to be employed an equal degree of agreement was reached. While such methods as the diastase reaction and the estimation of blood sugar and of electrical resistances had their advocates, the weight of opinion was in favour of the urea concentration test, the estimation of blood urea, and, for the comparison of one kidney with another, the intravenous injection of indigo-carmine. We understand that a special sub-committee of the Section of Urology has been appointed to examine and report on the material brought forward by those taking part in the discussion. We look forward with interest to the publication of its conclusions.

NOXIOUS DRUGS AND THE LEAGUE OF NATIONS.

WE trust that the proceedings of the Committee of the League of Nations appointed to advise on the execution of the Opium Convention, reported elsewhere in this issue (p. 724), may serve to press forward that control of the traffic in drugs of addiction which we have consistently advocated for many years past in these columns. The Committee is not invested with any executive powers, and can only advise the Council and Assembly of the League as to the extent to which the International Opium Convention, signed at the Hague ten years ago, has up to the present time been carried out, and as to the steps which should be taken to secure its universal adoption and its effective application. Our own Dangerous Drugs Act, the final form of the Regulations made thereunder, and the licensing and supervision of premises where these drugs are manufactured (only recently inaugurated), may well serve as legislative

[1] BRITISH MEDICAL JOURNAL, September 17th, 1921, p. 425. Professor Maclean's book on *Modern Methods in the Diagnosis and Treatment of Renal Disease*, reviewed in our columns of January 28th last (p. 145), may also be consulted.

and administrative models which other nationalities would do well to follow.

We have previously expressed our regret that neither among the British representatives on the Advisory Committee nor among the three technical assessors of the Committee any medical man is included. Important questions, not only of a political but also of an essentially medical nature, are, we learn from our correspondent in Geneva, confronting, and indeed perplexing, the Advisory Committee. It is no doubt disappointing and vexatious that China, which agreed to arrangements with the British Government in 1908 and 1911 for the progressive suppression of the cultivation of the opium poppy *pari passu* with the abolition of the Indo-Chinese trade, should have repudiated its obligations. At one time it was credibly reported that in nearly all the provinces of China opium production had been substantially reduced or entirely prohibited, and no Indian opium has been directly imported into China for several years past. Following the revolution in China, and especially since the weakening of the Central Government, there has been from 1918 onwards a great recrudescence of opium cultivation under the provincial governors, who have found in the revenue derived from opium sales the means to pay their troops. China, it is alleged, has now become one of the greatest, if not the greatest, of the opium-producing countries of the world. It is nevertheless not a little disquieting to learn that the reduction of the import of Indian opium into China was accompanied by a remarkable increase in the export of British-made morphine to the Far East. We are not surprised to hear that the Japanese representative at Geneva was concerned at "the extensive importation of drugs into his country beyond all legitimate requirements," and there is little doubt that large quantities of morphine find their way through Japan into China; the latter country is, we believe, still innocent so far as the production of morphine is concerned. It was not a little embarrassing that at a recent meeting of the Anti-Opium Society in London a Chinese diplomat ingenuously remarked that he had observed that the anti-opium agitation was strongest in countries in which the largest amount of morphine was produced for export.

A laudable attempt is being made, in strict accordance with the provisions of the Opium Convention, to limit the export of dangerous drugs to the amount certified by the Government of the importing country to be required for medical and legitimate purposes. The Provisional Health Committee of the League has been called to the aid of the Opium Advisory Committee with a view to determine, if possible for each country, what may be regarded as the amount of legitimate consumption of the drugs in question. The problem is one of considerable difficulty, and our correspondent shows that the figures already vouchsafed from Switzerland, Sweden, and Denmark exhibit some strange anomalies. Moreover, in the case of countries like India, it has been repeatedly pointed out that where the recognized medical men are few and far between opium does not lose its efficacy when administered by irregular practitioners to whom the peasantry resort. There may be difficulties in the way of affirming that their use of the drug is illegitimate. Moreover, it was stated that the amount of the drugs in question actually consumed per head was very much greater in India than in a country like Denmark. The India Office has recently published a pamphlet entitled *The Truth about Indian Opium*, which provides much food for thought. It shows that the area under opium cultivation in British India is still about 150,000 acres, while in the Indian States there has been some increase in the area under the poppy in recent years, the acreage in them in 1919–20 being 56,934. Opium smoking is officially condemned as "essentially a social vice," and it is asserted that morphine, if used "for other than medical purposes, invariably takes the form of dangerous vice." The India Office nevertheless has a tender regard even for the non-medical use of raw opium as a "domestic medicine," as "the commonest and most treasured of the household remedies accessible to the people," as a panacea to "avert or lessen fatigue," as a "prophylactic against malaria," and so on. It would perhaps be unkind to inquire whether any of the 10,000 chests of raw opium annually exported by the Government of India chiefly to the Straits Settlements, French and Dutch East Indies, Hong-Kong, and Macao, are there utilized for the "social vice" of opium smoking. The Indian Government stands by the report of the Royal Commission on Opium of 1893–94, which it says "remains unchallenged," although Lord Morley when Secretary of State for India declared that it had "somehow or other failed to satisfy public opinion in this country or to ease the consciences of those who had taken the matter up." Lord Morley contrasted the views of the "official-minded" with the "philanthropists" on this much-debated question. There is also the view of the scientists to be heard, who may be disposed to inquire whether the active principle of opium differs in its pharmacological effects, physical and mental, according to whether it is inhaled, ingested, or injected. Whether the world's production of opium, morphine, heroin, and cocaine, does or does not exceed the legitimate requirements of mankind may be a matter of argument, but one can hardly open a newspaper without finding that a not inconsiderable quantity of these drugs gets into unlawful hands and is put to vile and illegitimate purposes. The early and effective enforcement of the International Opium Convention was never more needed than it is to-day.

THE LISTER INSTITUTE.

THE twenty-eighth annual report of the governing body of the Lister Institute of Preventive Medicine, presented to the annual general meeting held on Wednesday, May 3rd, affords evidence of great and continuous activity in all the departments. Dr. J. A. Arkwright, who in November, 1920, took charge of an investigation into foot and mouth disease under the auspices of a committee appointed by the Ministry of Agriculture, returned to duty as assistant bacteriologist in the Department of Bacteriology in October, 1921, and resumed his investigations on the virus of typhus fever, in conjunction with Mr. Bacot. At the request of the Director-General, Egyptian Medical Service, the services of Dr. Arkwright and Mr. Bacot were placed at the disposal of the Egyptian Government, and they went to Cairo in January. The report contains an expression of the grief of the governing body that after the investigations had been in progress only two months both Mr. Bacot and Dr. Arkwright contracted the disease. Mr. Bacot, on April 22nd, as we had regretfully to announce, succumbed to the disease, but Dr. Arkwright, though at one time gravely ill, is now, we are glad to learn, making a good recovery. Mr. Bacot had been working at the morphology of the whole group of *Rickettsia* organisms and the relation of the pathogenic to the non-pathogenic species. Before his departure for Egypt he had been investigating the entomological side of the epidemiology of typhus fever in collaboration with Dr. Atkins. It is now generally accepted that the louse is the infecting agent, and previous workers have been able to infect monkeys by crushed lice, previously fed on a typhus patient during the acute stages, and rubbing this into the infected skin, but the exact mode of infection under natural conditions has not yet been ascertained. So far as the experiments of Mr. Bacot and Dr. Atkins had gone, no evidence was obtained that the infection was produced during the act of sucking, though it was found possible to pass the virus of typhus from one monkey to another by the injection of

monkey-lice infected by feeding upon an animal known to have the disease. A great deal of the time of other workers attached to the institute has been given to the problem of accessory food factors (vitamins). Professor Korenchevsky, whose attention has been particularly directed to the part played by deficient diet in the production of rickets, has also investigated the possibility of the disease being infectious; an occasion for testing the opinion was provided by the discovery of a community of rats in which an outbreak of rickets had spontaneously occurred. In view of the fact that Morpurgo has reported the isolation of a specific micrococcus from animals, subject to such a spontaneous outbreak, the inoculation of which was followed after some weeks by typical rickets, Korenchevsky searched the tissues and organisms of the rats in the outbreak mentioned above for evidence of infection, but found none. Dr. Goldblatt (Beit Fellow) is engaged, with the assistance of Miss K. M. Soames, in studying the quantitative relation of fat-soluble A to experimental rickets. The influence of sunlight upon the development of rickets in animals upon a deficient diet is also being investigated. Inquiries made for the Committee on Accessory Food Factors appointed jointly by the Lister Institute and the Medical Research Council have been continued in Vienna, and there also the influence of light and fresh air upon the incidence and cure of rickets has been studied. As rickets displays a definite seasonal incidence, the observations have been divided into a summer–autumn period and a winter–spring period. The investigation is complicated by the fact that the amount of vitamin A present in the milk of cows varies with the season, the cow apparently merely transmitting the vitamins it obtains from fresh food. In Vienna two parallel series of observations on children are being carried out simultaneously, under precisely similar conditions, except that the diet of the cows furnishing the milk to each series varies; in the one the animals are being fed upon the ration usually given to cows confined in stables in winter; in the other as much green fodder as can be procured is added to the cow's ration, and approximate adjustment of the other constituents made. In the department for the preparation and study of antitoxic serum work on the concentration of serums has been continued, and it appears probable that concentration of the original plasma to a third or a fourth of its bulk will be the most feasible method, although higher concentrations have been obtained. The new method of preparing and tubing antivariolous vaccine carried out in the Department for the Preparation and Study of Antivariolous Vaccine has given good results. A considerable proportion of this vaccine is destined for use in tropical countries, and the new preparation is being tested by medical officers at two or three stations in the tropics. There is, the report states, an increasing volume of evidence that strains of variola vary in different parts of the world and at different times. Some degree of immunity to all is produced by vaccination, but it is thought not improbable that the best immunity is one aroused by a vaccine possessed of not too distant relationship to the strain of variola locally endemic. Special strains of antivariolous vaccines have been raised from variolous material obtained by medical officers of colonial governments, and these are being studied with the object of obtaining the best immunization of the populations.

SMALL-POX IN SINGAPORE.

AT a meeting of the Malaya Branch of the British Medical Association on March 16th Dr. G. A. C. Gordon, D.P.H., submitted a memorandum on a small-pox epidemic in Singapore, which came under notice in May, 1921, and was continuing to spread. Only two cases were notified monthly in June, July, and August, but in September the notifications mounted to 18, in January this year to 39, and in February to 80. The remarkable difficulty of controlling an outbreak of variola in the circumstances which exist at Singapore is well shown in Dr. Gordon's memorandum. The population is made up of Europeans, Eurasians, Chinese, Malays, Indians, Japanese, and Siamese. In races so varied there is no common concept of communal duty in the stamping out of infectious disease. Concealment is so general that more than 50 per cent. of known cases have been discovered not by notification but through house-to-house search by sanitary inspectors, who may discover the infected hidden under beds, or rolled in bedding, or in latrines, and so forth. When death occurs the body is usually dumped on the nearest piece of waste ground, or even on the street. Under conditions like these some of this country's routine preventive measures, such as search for and surveillance of contacts, are out of the question. Even hospital isolation can be of very limited value where so many sources of infection remain scattered throughout the population. The reader, indeed, is, by a process of exclusion, forced to the view that preventive policy should be primarily directed to rendering immune by means of vaccination every member of the population who can be persuaded to accept protection; at the same time, of course, other measures must be adopted to whatever extent is found practicable. But even as to vaccination there must be problems in Singapore of which we know nothing in England. The capital of the Malay peninsula is situated almost on the line of the Equator, and the establishment and maintenance of a stock of reliable vaccine lymph under tropical conditions is a matter of very special difficulty. References to this trouble are not wanting in Dr. Gordon's memorandum, especially to what seems locally known as "Java lymph," concerning which it is asked whether a person successfully vaccinated with Java lymph would "be susceptible to an attack of Hong-Kong small-pox." In this connexion we may refer readers to the concluding sentences of the note on the Lister Institute published above. In addition to the possibility of various strains it should be remembered, in judging the protective value of a vaccine lymph, that a local reaction to revaccination a few years subsequent to primary vaccination is not necessarily equivalent to disappearance of protection against attack or death from small-pox. The drift away from complete immunity is gradual, and the first stage is renewal of some degree of local susceptibility to vaccination. The deaths from small-pox among 269 cases were 65, or 24 per cent., and of the 65, "21 were found dead." The Chinese, who form the largest section of the population, had had much less proportionally of the epidemic than the other races, but Singapore's Chinatown is in the southern part of the city, which had not apparently been as yet seriously invaded. The fatality rate among the Chinese was, however, 38 per cent. of the cases, whilst among Malays it was 11 per cent., and amongst Indians 19 per cent. The data, however, are as yet insufficient to allow conclusions to be based on them. We take it that Dr. Gordon is a young medical administrator who has been called on to tackle a hard problem almost at the beginning of his career. He has done wisely to discuss the matter frankly with his brethren of the British Medical Association in his part of the world, and we are sure that, as regards supply of vaccine lymph and other such requirements, all the help of the Colonial Office and of the Ministry of Health will be freely available to the Singapore Health Department. He is probably right in his expectation that a speedy termination of the Singapore epidemic is not to be expected, and the Department should, if necessary, be able to get into touch with the central authorities in time to reap the benefit of their experiences of epidemic disease in our far-flung empire.

GENERAL MEDICAL COUNCIL.

THE next session of the General Medical Council will commence at 2 p.m. on Tuesday, May 23rd, when the President, Sir Donald MacAlister, K.C.B., M.D., will take the chair and give an address. The Council will continue to sit from day to day until the termination of its business. Among the subjects to be discussed the two most important deal with medical education and examination. The first has reference to the Diploma in Public Health. The discussion of the new regulations for the Diploma in Public Health has

now reached an advanced stage, and it seems probable that the recommendations of the Public Health Committee will be adopted at this meeting and come into force at an early date. The Council is directly responsible for these regulations. Those now in force were originally adopted on June 1st, 1889; they have since been amended and amplified from time to time, particularly on December 1st, 1911, with a view to bringing the special course of instruction required of candidates for the Diploma in Public Health into harmony with the duties of the modern medical officer of health, which have changed considerably since the resolutions were originally adopted. As was pointed out in a leading article published on December 10th last (1921, vol. ii, p. 1000) it is clear that a very decided advance along the whole line of instruction and examination for the diploma in public health is contemplated. At present a candidate can obtain a diploma in public health within nine months or a year after his name first appears on the *Medical Register*; it is now proposed that at least two years must elapse. A candidate will be able to take the laboratory work required immediately after registration and present himself for the first of the two examinations for the D.P.H as soon as he pleases thereafter; but if the new scheme is adopted he will in future not be admitted to the second examination until the end of the second year from registration. It is believed that a new graduate in medicine will be the better qualified to take up the special duties of public health administration if he has become somewhat more mature in thought and in general outlook than is usually possible for a medical student immediately after obtaining a registrable medical qualification. How such part of the two years as is not devoted to study for the diploma in public health should be spent is not specified, but no doubt it is hoped that either through hospital or private practice the young man may in most cases learn something of the proper relations of the public health official to the public and to the general practitioner. A candidate will, however, be required to spend six months in practical training under a medical officer of health, and this training will include instruction in the administration of the newer activities of public health departments—maternity and child welfare, and the school medical, venereal disease, and tuberculosis services. It is desirable to emphasize that this training is not to be clinical in nature, but administrative. Clearly the Council has not forgotten that the position and experience of the general medical practitioner as family doctor should be recognized, and that he must not be ousted from his own sphere of work. The other matter affects the general medical curriculum: it was discussed at length in our columns in January, 1921, in a series of articles on "Reform in Medical Education." The proposals arose out of an instruction given by the Council to its Education Committee in May, 1918, to make a report on the question whether any action should be taken to promote and systematize the teaching of preventive medicine in the medical schools and in clinical hospitals throughout the country. The committee consulted the schools, and reported in May, 1920, that the questions raised by them would involve the revision of the whole curriculum in medicine; thereupon the committee was instructed to report fully. The report it produced was discussed by the Council in November, 1921, and certain recommendations were adopted which have since been under the consideration of the medical schools and licensing bodies. The relation of the Council to the universities and colleges is not such as to give it direct control over the medical curriculum. The licensing bodies have practical autonomy, so that the Council can only make recommendations, which may or may not be accepted. The action of the Royal Colleges in England, however, seems to foreshadow the adoption of the recommendations very much as they stand, for the Conjoint Board in England has issued new draft regulations in anticipation of the final discussion by the Council this month. Their effect can be gathered from the leading article on the medical curriculum published in this issue (p. 727).

DIAGNOSIS OF OBSTRUCTIVE JAUNDICE.

THE differentiation of obstructive from other forms of jaundice is often difficult, and yet vitally important because the former varieties of icterus may demand surgical treatment which would be of no value in jaundice of haemolytic origin or due to functional disturbance of the hepatic cells. The paper by Dr. McNee, which is published in this issue, gives an account of the test devised by van den Bergh for the purpose of distinguishing between these two groups of widely different origin. In principle it depends on the application to the examination of bilirubin in the serum of Ehrlich's "diazo reaction," which was introduced for another purpose and generally discarded as useless for that purpose. Van den Bergh found that the bilirubin circulating in the blood of patients suffering from obstructive jaundice reacts with the diazo reagent in a manner which differs from the reaction of bilirubin found in haemolytic jaundice or functional disease; the explanation suggested is that the pigment is bound to albuminoid substances in functional and haemolytic jaundice, and the union can only be broken down by time and alcoholic precipitation. The test can be performed very simply by mixing equal quantities of the patient's serum and the reagents, when if the case be one of obstructive jaundice a bluish-violet colour appears immediately, whereas in other forms of jaundice this colour does not appear at once; only after precipitation with alcohol is a violet-red colour obtained. The alcohol precipitation method may be used for quantitative estimation of bile in serum by a simple colorimetric method, a procedure obviously of great value for observing on the one hand progressively increasing obstruction as in malignant disease, or on the other the cessation of obstruction following the escape of a gall stone from the common bile duct, since the skin pigmentation in jaundice changes comparatively slowly. There are, however, bi-phasic reactions in which no clearly marked distinction between the direct and indirect test is obtained, but the information they supply is of value to the clinician in that they suggest that the jaundice is due to both obstructive and haemolytic or functional factors. The brief reports which Dr. McNee gives of cases demonstrate clearly the value of the test. Thus in the first two cases cited no operation need have been performed had reliance been placed upon the bilirubin test, whereas in Cases 3 and 4 it could have been foretold that the jaundice was obstructive in origin. Dr. McNee's paper is only a preliminary communication on the subject, and his further conclusions will be awaited with interest; but in the meantime this simple test seems to be of sufficiently established value for it to be more widely used.

SCIENTIFIC SECTIONS AT THE GLASGOW ANNUAL MEETING.

THE officers of the Section of Industrial Disease and Forensic Medicine at the forthcoming Annual Meeting of the British Medical Association in Glasgow have arranged the following provisional programme: An opening address by Professor Glaister, followed by papers by Sir Thomas Oliver, Sir W. H. Willcox, Dr. John Glaister, jun., and Dr. R. A. Lyster. For the discussion on "Stillbirth and neo-natal death," in the Section of Obstetrics and Gynaecology, on Wednesday, July 26th, the following arrangement has now been made: Dr. J. W. Ballantyne will speak on "Ante-natal, intra-natal, and neo-natal death: causes, pathology, and prevention, with special reference to ante-natal death"; Mr. Eardley Holland, on "Intra-natal death"; Professor A. M. Kennedy and Dr. F. G. Browne, on "Neo-natal death"; Professor Louise McIlroy, on "Ante-natal death due to toxaemia of pregnancy"; and Dr. J. N. Cruickshank and Dr. Gilbert Strachan will open the discussion. Two more items are now to be included in the programme of the Section of Anatomy: Professor T. H. Bryce will demonstrate a series of embryological models, and Dr. W. K. Connell (University of Glasgow) will read a paper on the form of the palate in children. The names of the officers of the nineteen Scientific Sections were published in the

SUPPLEMENT of February 18th, at p. 39. The Sections will meet on Wednesday, Thursday, and Friday, July 26th, 27th, and 28th, the mornings being devoted to discussions and papers, the afternoons to clinical and laboratory demonstrations. The five following two-day Sections will meet on the Wednesday and Thursday: Dermatology, Diseases of Children, Physiology, Industrial Disease and Forensic Medicine, Radiology and Electrology. Of the single-day Sections those of Anaesthetics and of Otology will hold their sessions on Wednesday; the Sections of Laryngology and of Tuberculosis will meet on Thursday; the Section of Anatomy on Friday; and the Section of Medical Sociology on Friday morning and afternoon.

MEDICAL PORTRAITS AT THE ROYAL ACADEMY.

THE one hundred and fifty-fourth exhibition of the Royal Academy of Arts, which opened to the public on Monday, is generally regarded by the critics as giving a very fair representation of British pictorial art at the present day, and in particular of the art of the portrait painter. Following the custom of recent years the exhibits are comparatively few in number and judiciously arranged; instead of a fatiguing mass of distant pictures far above the eye level, there are now restful grey walls. The many portraits in this year's exhibition include several of medical men and women. In Gallery IV there is a large portrait in oils by Walter W. Russell of Sir Norman Moore in the presidential gown of the Royal College of Physicians of London. The likeness is unmistakable, yet the portrait is a little disappointing, for the painter seems to have given almost overwhelming attention to the black and gold-laced robe. In Gallery III Frederic Whiting has been happier in his portraiture of Sir James Crichton-Browne, whose doctor's scarlet gown shows well against a black background, but is not unduly emphasized. On the opposite wall there is a portrait, by Solomon J. Solomon, of the Treasurer of St. Thomas's Hospital, a short distance away from the most remarkable of Orpen's six portraits. In Gallery VII will be found a quiet and pleasing portrait in oils of Dr. Jane Walker, by W. G. de Glehn; the effect would scarcely have been so good had the sitter worn vivid academic costume. The sculpture rooms contain a fine marble bust of Sir John Bland-Sutton, the work of Sir George Frampton; the profile is particularly effective. There is also, in this gallery, a charming bust of Miss M. Bostock, M.D., F.R.C.S., by Miss Isobel Donaldson. The works we have enumerated comprise all the medical portraits in the present exhibition, except a miniature, by Miss C. E. Wise, of Dr. V. H. Rutherford, formerly M.P. for Brentford, and a mezzotint by H. Macbeth-Raeburn, after Raeburn's famous portrait in the Archers' Hall, Edinburgh, of Dr. Nathaniel Spens, who was surgeon to the Royal Company of Archers. Mention may also be made of Anning Bell's portrait of Professor Lloyd Morgan, for many years a prominent teacher in the Bristol Medical School. In the black and white room there is a small etching of out-patients waiting in the dispensary of St. Thomas's Hospital. The architectural room contains designs for a number of medical institutions, including the Singapore Medical School, and the Institute of Medical Science at University College; also a very attractive sketch entitled "A Doctor's House, Westerham." The exhibition as a whole, if not of exceptional merit, is unusually interesting from many points of view.

IDENTIFICATION AND THE "VIEW" AT CORONERS' INQUESTS.

WE have received a communication from Dr. Waldo, coroner for the City of London, calling attention to the way in which the device for preserving bodies in the City mortuary has proved its usefulness. The apparatus, a French invention, by which the bodies are subjected to the action of formalin, was first provided some fourteen years ago, and more recently the local health authority has installed a similar apparatus in Dr. Waldo's court at Southwark. These are the only two mortuaries so equipped in the United Kingdom. On several occasions bodies have been identified after periods during which, in ordinary circumstances, they would have become unrecognizable. In the same communication Dr. Waldo gives his reasons for advocating the retention of the "view" at coroners' inquests. Briefly, these are that the view affords the best evidence of the fact of death, that it prevents the hushing up of suspicious deaths by influential relatives and officials, that it has a deterrent effect upon evil-doers, and that it ensures the inquest being held in the vicinity of the place where the body is lying. He considers that but for the view a country coroner would be able, if he wished, to hold his inquiry in his own office, and summon the witnesses possibly from long distances away from the place where the body was lying. We agree with Dr. Waldo to the extent of retaining the "view" by the coroner, but we do not consider that any useful purpose is served by requiring the jury to view. In most courts this is now a purely perfunctory process, the jury merely glancing through a window into the mortuary at a body completely covered except for the face—a procedure which can in no way help the jury either to appreciate the medical evidence or to understand the cause of death. We are unable to follow Dr. Waldo's argument that the view acts as a deterrent to crime; nor do we understand how the view can prevent the hushing up of cases, since a decision to hold an inquest will already have been made before the view is required. It is understood that a bill is shortly to be introduced in Parliament for the purpose of amending coroners' law, and we hope its general trend will be to increase the sphere of usefulness of the inquest as a medical inquiry, since the purely legal points are already to such a large extent dealt with by other tribunals. Should this expectation be realized, we think it desirable for the coroner to view the body in every case, and his view might well include an observation of the part or organ which is concerned in the cause of death. This procedure would enable the coroner better to deal with the medical evidence, and would also have the advantage of strengthening the argument for appointing medical men to this office.

PROCEDURE IN THE DEFENCE OF INSANITY IN CRIMINAL CASES.

AN interesting case which calls attention to the position of undefended prisoners in criminal trials was heard at the Old Bailey last week. On April 26th a gardener was found guilty of attempted murder, the jury adding their opinion that the prisoner's mind was unbalanced at the time he committed the offence. The judge, Mr. Justice McCardie, then received a report from the medical officer of the prison to the effect that the man was suffering from melancholia when admitted to the gaol a month after the crime; that he subsequently developed suicidal tendencies, but was now sane. On April 27th the judge directed that the case should be reopened in order that the jury might have an opportunity of expressing formally their view as to whether or not the prisoner was of sound mind. The jury, without leaving the box, then returned a verdict of guilty but insane, and the prisoner was ordered to be detained during His Majesty's pleasure. On the first day the prisoner was undefended by counsel, but on the second day, at the request of the judge, he was so defended. The case led Mr. Justice McCardie to question the justice of the court practice which throws on the defence the onus of proving a prisoner's insanity, particularly when the prisoner is undefended by counsel. The rule was stated to be based upon the decision in the case of the King *v.* Oliver Smith in the Court of Criminal Appeal, but he was not in agreement with that rule and with the interpretations which had been placed upon it. It was not his practice on circuit to observe it rigidly, and he hoped it was not that of other judges. At the close of the case the judge asked Mr. Travers Humphreys, who had represented the prosecution on the first day, to express his views upon the matter. Mr. Humphreys said that the practice at that court varied as to whether the prisoner was or was not defended by counsel. In defended cases it had been consistently laid down from Macnaughten's case that insanity was an issue which could

only be raised by the defence, because every prisoner was presumed to be sane until the contrary was proved. It was the invariable practice to give the defendant's solicitor or counsel any evidence the prosecution possessed as to the state of the defendant's mind. The prosecution had also to see that the judge was in possession of all the material to enable him to make up his mind as to whether the issue of insanity should be raised even if the defence had not raised it. So far as he knew that was done in the present case. The report of one medical man (Dr. Young) was not in possession of the prosecution. It was merely an intimation for the guidance of the clerk of the court. The report of another medical man (Dr. East, medical officer of Brixton Prison) was before the judge and the defence. A difficult question arose when a prisoner was undefended, because a person who was insane in the view of the prosecution might believe himself to be sane and decline to raise the issue of insanity. In these circumstances the practice of Treasury counsel was to tell the jury that the issue might be raised, and at the close of the case to ask the judge whether he desired the prosecution to call any medical evidence which they had. The judge could always raise the issue, but the prosecution had not the right to do so if defendant did not wish it raised. Mr. Justice McCardie considered that that practice to a large extent safeguarded the position of the prisoner, but he was not at all sure that counsel for the prosecution in undefended cases were at the present day free from the responsibility of raising the defence of insanity. He would not lay down any definite rule—this case did not call for any—but he ventured to say that the decision in the case of the King *v.* Oliver Smith did not lay down any rigid or rigorous rule. The duty of counsel varied with the circumstances, and he was not satisfied that the decision in the King *v.* Oliver Smith represented sound practice or the existing practice of the majority of the judges. We agree that the procedure adopted in the Old Bailey reduces to a minimum the risk of injustice being done, and we hope that in courts where this procedure is not followed Mr. Justice McCardie's observations will be noted. The position of an undefended insane prisoner is one that calls for much sympathy, and legal technicalities should not be allowed to stand in the way of giving him every assistance in his defence.

MANY INVENTIONS.

AN article with the heading "Albert Abrams, A.M., M.D., LL.D., F.R.M.S., 'Spondylotherapy,' 'Electronic Reactions,' the 'Oscilloclast,' the 'Electrobioscope,' etc.," appears in the *Journal of the American Medical Association* of March 25th, 1922, in the section entitled "The Propaganda for Reform." Our contemporary states that Dr. Abrams is a native of San Francisco who graduated in medicine at the University of Heidelberg, Germany, in 1882; he "is a member of his local medical society, and through that holds fellowship in the American Medical Association." He has written voluminously, and in 1910 published a book on *Spondylotherapy*, which apparently deals with the same subject as that upon which osteopaths and chiropractors lay so much stress—the so-called "physiotherapy of the spine." In addition to this, Dr. Abrams has devised what he terms the "electronic reactions of Abrams." Remarkable claims have been advanced for these reactions. They are said to make long-distance diagnosis possible, for it is necessary only to send a few drops of blood taken from a patient and allowed to dry on a slide, when with the aid of certain instruments and devices a diagnosis may be made. According to the article in our contemporary it is asserted that from a fresh sample of blood spread over four square inches of blotting paper the sex, race, and disease of the patient can by Dr. Abrams's method be distinguished. Certain precautions must, however, be taken. The patient should face west, the blood should be taken in a subdued light, and there should be no strong red or yellow colouring material in the room. The most astonishing piece of apparatus seems to be the "oscilloclast." This device, we read, is not for sale. It can be had only on lease, and the first payment is 200 or 250 dollars, according to whether it is wired for alternating or direct current; subsequently there is a monthly payment of 5 dollars. According to Dr. Abrams, all that is needed is to ascertain the "vibration rate of a drug," and then to substitute the same vibration as produced by the oscilloclast. Thus, if the "vibratory rate of atropine" be substituted for the drug itself, "the mouth dries or the subject feels as if it were puckered." Conversely, if the oscilloclast is switched to the pilocarpine vibratory rate, there is a copious flow of saliva. Dr. Abrams has extended his observations and experiments to a further device, the "electrobioscope," with which he has demonstrated the "sexuality of numbers and sounds." In this instrument if a pith ball is charged negatively and the numbers one to nine are marked on a narrow board and the vowels and consonants on another board, it will be found—according to Dr. Abrams—that even numbers repel the pith ball, while odd numbers attract it. Vowels likewise repel and consonants attract; a female hair repels and a male hair attracts. From these data Dr. Abrams draws the curious deduction that vowels and even numbers are female, consonants and odd numbers male. We may end by quoting the words of the *Journal of the American Medical Association*: "If there is any scientific foundation for the marvels that Dr. Abrams so picturesquely features, the scientific world has not yet found it out!"

SICKNESS AND INSURANCE.

MEDICAL men, we believe, are now more generally disposed than in the past to insure against the expenses and losses of sickness. This is a very commendable practice, more especially as the doctor has to face, not only the actual extra expenditure on himself when ill, but also, commonly, the payment of the fees of a locumtenent. The premium charged by insurance companies is governed by the extent of the expected liability, and should a medical man be so unfortunate as to have to make a large claim one year he does not wish to be told at the end of it that the insurance will not be renewed. Herein lies the value of a policy that covers all illness, including permanent disability, and one that cannot be ended by the company until the policy holder attains a certain age. The Medical Sickness Society, which was founded by doctors for doctors in 1884, has by the valuable work it has done helped to bring home to the profession the great importance of this class of insurance. The Society now has some thousands of doctors and dentists as members, but their number might advantageously be increased. The fact that the Society is purely mutual, has no shareholders, and pays no commission, enables it to offer a very comprehensive sickness and accident policy at the lowest rates obtainable, and permanent until the limit of age is reached. It undertakes also all classes of life assurance at low rates. Members of the profession can obtain all particulars from the Secretary, the Medical Sickness Annuity and Life Assurance Society, Ltd., 300, High Holborn, London, W.C.1.

PROFESSIONAL CLASSES AID COUNCIL.

THE Professional Classes Aid Council is in need of money. Mrs. Scharlieb, C.B.E., M.D., who was chairman of the Maternity Committee of the Professional Classes War Relief Council during the war, asks us to bring the need before readers of the BRITISH MEDICAL JOURNAL. "I know," she says, "how many doctors received help for themselves or for their families from the very judicious and helpful manner in which the council dispensed the funds entrusted to them." The council, owing to lack of funds, is now compelled to refuse applications for assistance in the education of children, grants in illness and convalescence, and other forms of help. Subscriptions may be sent to the Secretary, Professional Classes Aid Council, at 251, Brompton Road, S.W.3. The British Medical Association is represented on the council by its Treasurer, Dr. Haslip.

THE annual oration before the Medical Society of London will be given in the rooms of the society (11, Chandos Street, Cavendish Square, W.1) on Monday next, May 8th, by Mr.

H. J. Waring on "Hospitals: some suggestions as regards their future." The President will receive Fellows and guests at 8.30 o'clock, and the oration will be delivered at 9 p.m.; it will be followed by a conversazione.

THE Croonian lecture will be delivered before the Royal Society on Thursday, June 1st, by Dr. T. H. Morgan, professor of experimental zoology in Columbia University, New York. The subject he has selected is the mechanism of heredity.

Medical Notes in Parliament.

[FROM OUR PARLIAMENTARY CORRESPONDENT.]

The Budget for 1922–23.

THE essential facts of the Budget, described by Sir Robert Horne on May 1st, fall within narrow compass. Its basis is that on existing taxation the revenue would be £956,625,000 against an expenditure of £910,069,000, giving a surplus of £46,556,000. But this surplus was reached apart from the usual consideration for debt repayment or allowance for the Sinking Fund. After pointing out that the country had provided during the last two years £322,000,000 in cash for the redemption of debt, the Chancellor of the Exchequer presented arguments for a breathing space in the matter of debt repayment. He dwelt upon the unparalleled depression in trade, and upon what it meant in unemployment to an extent unknown before, and in privations for the professional and middle classes such as they had never previously had to face. There were, however, hopeful signs of revival which with a little encouragement might develop into solid progress. He claimed that in the circumstances the Government would be justified in suspending the Sinking Fund, and proceeded to state how they proposed to apply the surplus already indicated. He dealt first with postal rates because the Post Office had provided a profit, and explained that he had agreed with the Postmaster-General that the Sunday collections (but not deliveries) should be restored; that the postcard rates should be reduced to a penny; that the minimum in postal charge for printed papers should, subject to certain conditions, be reduced from one penny to one halfpenny on packages not exceeding one ounce, the rate for two ounces to remain as now—one penny; that the minimum charge for inland letters should be reduced from twopence to threehalfpence for one ounce, and for Empire and U.S.A. letters from twopence to threehalfpence for one ounce; and that certain reductions should be made in telephone charges, at a cost of about a million sterling. The total cost of these concessions for the present financial year would be about £5,650,000. The postal changes would come into effect at the end of May.

The general reductions which Sir Robert Horne announced were: 1s. in the £1 off Income Tax at a cost, in the present year, of £32,500,500, and a reduction of 4d. per pound on the duty on tea (with a reduction of one-third on the linked-up duties on coffee, cocoa, and chicory) at a cost of £5,000,000 in the present year. Earlier the Chancellor had announced a reduction in the basis of assessment of agricultural land to one-third the annual value (which, with certain concessions, for amenity lands would cost £1,100,000 this year) and some alterations in Income Tax law and the incidence of the Excess Profits Duty. The former would cost the country this year £700,000, the latter £2,000,000. Sir Robert Horne did not explain how the reduction in Income Tax will apply to incomes now paying less than 6s. Mr. Hilton Young, Financial Secretary to the Treasury, however, stated later that though the basic rate was reduced by 1s. it did not follow that the income tax of all persons would be reduced by 1s. in the £. The reduction of the basic rate by 1s. resulted in the reduction "of all our income taxes by one-sixth." It appears, therefore, that, while the 6s. charge will be reduced to 5s., the 3s. charge on a lower scale of income will be reduced to 2s. 6d. It was promised that a table showing how the tax worked out would be made available in a few days.

Thus Sir Robert Horne showed a balance sheet which would leave, at the end of the present financial year, an estimated surplus of £706,000. In regard to the Sinking Fund he explained that, as contractual liabilities would have to be met, money would have to be raised for that purpose, but this would not actually increase the debt. It should be added that a number of minor points were dealt with not involving any large financial considerations for the State. The Chancellor said that in face of a House of Lords' decision, which had overthrown the practice of sixty years in regard to the assessment of Income Tax for employees of public companies, he should propose legislation to base the Income Tax assessment of all employees upon their salary or remuneration for the current year. In reference to charity legacies representations had been made to him, particularly by the hospitals, as to the position arising out of the decision of the House of Lords in the case of Dr. Barnardo's Homes. In that case it was held that the charity could not claim exemption from income tax on the income from residuary estate, except as from the time when the residue was actually paid over. This, though not a large matter, had occasioned a considerable amount of hardship, and he proposed to remedy the grievance. He also intended to include in the Finance Bill proposals for increasing the normal flat rate repair allowance in the case of small houses, and for enabling claims to be made for the actual cost of maintenance, and not only in the cases now authorized, but in the case of all lands and houses of whatever value. The Budget contains no relief for the owners of motor vehicles. The motor vehicle duties, which were estimated to yield last year nine millions, actually yielded two millions more. The estimate for 1922–23 is £10,600,000.

In the course of discussion which followed Mr. Asquith was the chief speaker. Mr. Hilton Young, winding up the debate, referred to questions raised as to the hardship inflicted by the Corporation Profit Tax upon various corporations instituted for philanthropic or other beneficial purposes and promised sympathetic consideration to the appeals made.

It should, perhaps, be said for clearness that the reduction in the Income Tax does not affect demands already issued as it applies only to the financial year which began in April, 1922, and in regard to which the first demands are made on January 1st next. The return on which the Budget was based shows that the amount owing to this country by the Dominions and Colonies was one hundred and fifty millions, and by the Allies, excluding Russia, nearly twelve hundred millions. Relief and Reconstruction Loans amounted to thirty millions, of which twelve millions were to Austria. The sums lent to Russia amount to over six hundred and fifty millions.

The Education Vote.

Introducing, on April 27th, a vote of £27,900,000 for education purposes, Mr. H. A. L. Fisher said that the total estimate of £44,900,000 showed a decrease of £6,104,653 as compared with that of last year. Of this economy the sum of £1,205,683 was due to the fact that many students who had been undergoing a course of instruction at the universities and other places with the aid of grants from the Board had now completed these courses.

Touching the magnitude of the work of the Department, the Minister said it had to deal with 20,000 public elementary schools with nearly six million children on the registers; with over 1,200 secondary schools containing more than 360,000 pupils; with technical and evening schools, schools of art, university tutorial classes, continuation schools, etc., over 5,000 in number, with nearly a million students; and with over one hundred training colleges and departments for teachers, with about 14,000 students in training. The Minister referred also to other particular services and claimed that in all the circumstances the staff at headquarters could not be deemed excessive. The expenditure on special services, which would be recognized by a grant to the extent of 50 per cent. of that expenditure, was to be limited to £3,400,000, which was less by £754,000 than the local education authorities' revised estimate, and this reduction would be accounted for chiefly by a diminution of £730,000 in the provision of meals, which in 1921–22 reached the abnormal figure of £1,030,000. It was no part of the Government policy to curtail any expenditure really necessary to preserve our child population in bodily health. That would be the worst and most ruinous form of waste. But so vast an expansion of the eleemosynary treatment of school children as had been witnessed lately was not, correctly speaking, an educational function, the cost of which should fall upon the education rate or upon the vote of the Board, and so they proposed to limit the sum chargeable on the vote in respect of the provision of meals to £150,000, which was more than sufficient to meet the normal claim in a normal year. Abnormal claims arising from great waves of unemployment should be met out of other funds.

The School Medical Service.

Coming to the medical service proper, Mr. Fisher said he should be very sorry to see any damaging economy either in the sphere of medical inspection or in the treatment or management of special schools. The school medical service inspected over two and a half million children every year, while the attendance of the children at the clinics ran to many millions annually. The cost to the Exchequer of all this work amounted to about 2s. 6d. per head of the six million children in average attendance at public elementary schools. On such figures he thought it could not be regarded as extravagant: the cost had increased, but so also had the value. He could not give complete figures for the country, but he had them for twenty-four areas, including the London area. Comparing the attendances at school clinics in these twenty-four areas for the years 1914 and 1920, he found that in the first named the attendance was a little over 700,000, and that in the latter it was a little over three millions. As the result of this work there had been an improvement in the cleanliness of school children amounting almost to a revolution, and a great and progressive improvement in regard

to dental defects and defects of vision while hundreds of thousands of children had had their physique and powers of resisting disease improved, with the result that in the case of some five hundred thousand children vast masses of subsequent disablement, sickness, and mortality had been prevented. He was happy to think that the local education authorities would be able to keep within the expenditure recognized for grants without any real injury to the service. There was, as he had explained, a limitation of £3,400,000, but most of the reduction was on the cost of feeding in schools. He did not say that there was no field for economy in the special schools. He was carefully examining the matter, and the Board would shortly publish revised regulations which would facilitate a reduction in the cost of schools for defectives without lessening the number of children who benefited from this form of care and treatment. He placed in a special category the schools for the blind and the deaf; they were very costly; much diminution could scarcely be expected, having regard to the attention required. Marvellous results were attained. In the other special schools the staff could be arranged on a more economical basis.

Debate.

In the course of the discussion, Mr. Asquith asked for an assurance that the question of a reduction of grants to local universities would be given an opportunity for real discussion on the Treasury vote. Mr. Fisher said that on request through the usual channels time would certainly be afforded.

Touching the means of access from the secondary schools, Mr. Acland said that his experience as Chairman of the London School of Medicine for Women and as a member of the governing bodies of the East London College and the London School of Economics, taught him that there was not yet anything like sufficient public provision to help really necessitous and deserving students. He had come across cases where a widow, say with a fixed income of £200 or £210 a year, had screwed and pinched so as to afford first one daughter and then a second the extraordinary expense of a medical training, and it was heartbreaking that all the State gave to help the training of a particularly promising pupil was an exhibition of £10 or £15 a year.

The debate was adjourned.

Dangerous Drugs Acts.—In reply to Mr. Ramsden, on May 1st, the Home Secretary said he had no power to order that twelve strokes of the cat, in addition to imprisonment for six months or more with hard labour, should be given to vendors caught illegally selling cocaine and similar drugs. The penalties were fixed by Section 13 of the Dangerous Drugs Act, and could not be altered without legislation. The maximum penalty allowed by the Act for a first offence—six months' imprisonment with hard labour, or a fine of £200, or both—ought, in his opinion, to be a sufficient deterrent, and he could not undertake to introduce amending legislation of the nature suggested.

Latest Pensions Statistics.—Mr. Macpherson, on April 26th, informed Mr. Alfred Short that the approximate number of pensions and weekly allowances in payment are as follows: Officers 32,000, nurses 1,400, officers' widows 9,600, officers' dependants 6,600, men 890,000, widows 159,000, dependants 362,000, motherless children 17,000. There are in addition allowances paid in respect of 1,140,000 wives and children of disabled men and 338,000 children of widows.

Disability Pensions.—On question by Mr. Maclean, on April 6th, Mr. Macpherson said the Ministry of Pensions was bound by and accepted without question a decision of the Pensions Appeal Tribunal that an appellant's disability was attributable to or aggravated by service, and therefore awarded compensation on the basis of the degree of disablement then found by a medical board to exist. When the disablement was less than 20 per cent., compensation took the form of a gratuity or a final weekly allowance.

Condensed Milk.—In reply to Mr. Doyle, on May 1st, Sir Alfred Mond said that his predecessor appointed a committee to consider the question of fixing standards for condensed milk, and draft regulations were prepared to give effect to the recommendations of the committee. It appeared, however, that there was no general agreement as to the standards to be fixed, and he therefore decided not to proceed with the regulations. He was not aware of any sufficient reason for fixing a standard for dried milk, as there could not be any misapprehension as to the degree of condensation of the product and any adulteration could be dealt with under the Food and Drugs Act. On the same day Sir A. Griffith Boscawen informed Mr. Doyle that the quantity of condensed, separated, or skimmed milk imported into the United Kingdom in the first three months of 1922 was 278,230 cwt., as compared with 157,112 cwt. in 1921, and 82,901 cwt. in 1920. The proportion of this which was machine-skimmed could not be stated. Mr. Baldwin, in reply to an earlier question by Mr. Doyle, said that the importation of machine-skimmed milk was prohibited in many countries; but he was not prepared to introduce legislation on this subject.

Sewage Purification.—In reply to Lieut.-Colonel Pownall, on May 1st, the Minister of Health stated that his attention had been drawn to the experiments of Dr. Renshaw and Mr. Fairbrother as to the value of dyes in sewage purification. Further research was necessary, and he was making the necessary inquiries.

Answers in Brief.

The approximate amounts of income tax and super-tax due to be paid but remaining unpaid on March 31st, 1921, were: Income tax (excluding the instalment due on July 1st, 1921) £86,000,000; super-tax £15,000,000. The amount of Corporation Profits Tax in assessment but unpaid (less sums due to be remitted) was £2,000,000.

CONDITIONAL NOTIFICATION OF VENEREAL DISEASE.

A CONFERENCE, called by the Mayor of Paddington, was held at Paddington Town Hall on April 28th to consider certain proposals put forward by the Paddington Propaganda Committee of the National Council for Combating Venereal Diseases. This scheme would make venereal disease notifiable in certain circumstances.

Mr. ARTHUR R. MORO, Chairman of the Committee, explained the proposals. He said that an average of from 50 to 60 per cent. of the persons attending the free clinics discharged themselves before their condition had become non-infectious. In view of the terrible harm which might be wrought by such people, he thought the general feeling would be that, even if some of the proposed measures did produce a certain amount of inconvenience or even hardship, the sacrifice would be worth while. In dealing with the difficult problems involved, the aim steadily to be kept in view must be (1) to check the spread of disease and protect the innocent, and (2) to cure the patient with as little inconvenience to him as possible.

The Paddington Scheme.

The scheme put forward by the Paddington Propaganda Committee was as follows:

1. Patients, when consulting a doctor or attending a venereal diseases clinic, should be warned that they must continue treatment until such treatment was completed. If, after the warning, they failed to be treated, their cases should be notified to the medical officer of health, whose duty it would be under the Health Acts to take the necessary proceedings.
2. In-patient accommodation must be provided for patients who, being in an infectious state, and a danger to the community, were not in a position to be treated in their own homes. In certain cases power of detention might be necessary.
3. It was proposed to add these diseases to the list of infectious diseases, which would automatically take them outside the civil law of libel; but it was considered that it would be necessary to safeguard the patient by making medical men liable if they improperly divulged private information obtained in the course of their practice.
4. In framing instructions it would be very useful if, instead of only warning the public of the danger they were in of contracting disease, it were explained to them how infection was *not* carried, and that, so long as a patient was not in an infective state, it was quite safe for him to go about his daily work and mix with others.

It would be seen (Mr. Moro continued) that this scheme for notification differed from ordinary notification of contagious diseases in that notification would here come into force only when a patient refused continuous treatment or was neglectful or recalcitrant, becoming thereby a menace to the safety of those with whom he was associated. Under this scheme doctors would be able to observe professional secrecy so long as secrecy did not imperil the health of others. The need of power to enforce continuous treatment was urgently felt at every clinic, in every infirmary, and by most medical men. Patients were constantly discharging themselves before they were cured, and they often resumed a manner of life which must spread the disease to others. Case after case could be cited in corroboration of this statement, and yet no powers of restraint existed, and no protection by law was given, and thus the disease was carried down to generation after generation of innocent children. How could any practical steps be taken until the doctors were free to act on behalf of the public? Doctors were silenced by the laws of libel and slander, as well as by custom and convention. The voice of public opinion alone could release the profession from these restrictions. He concluded by moving:

> That this Conference is of opinion that some form of modified notification of venereal diseases (which shall be enforced *only* when a patient refuses or neglects to continue treatment) is needed to check the spread of these diseases and to protect the public.

Support for Modified Notification.

Mrs. R. P. WETHERED, honorary secretary of the Associated Societies for the Care and Maintenance of Infants, seconded the motion. She said that until the law of libel was modified doctors would be powerless to protect the public. The existence of a system of notification would set them free. In fact, it would become a statutory obligation upon them to protect the public from a patient who was a source of danger.

Mr. E. B. TURNER, F.R.C.S., who supported the motion, said that it would not be possible to do anything in this matter until public opinion had been educated; but when the people were educated they would quickly come to the conclusion that everything possible must be done to ensure that those who came for treatment for venereal disease carried that treatment to its conclusion.

A letter in favour of the proposals was read from the Bishop of Kensington; and the Rural Dean of Paddington and the chairman of the Public Health Committee of the borough of Hampstead also supported the motion, which was carried unanimously.

Sir HENRY HARRIS, M.P., urged an official inquiry into the question of modified notification, for which, he said, the time was fully ripe. He moved:

> That the Ministry of Health be urged to appoint a committee of inquiry, to consist of medical men and laymen, to consider the question of modified notification and compulsory continuous treatment of venereal diseases and to hear evidence.

With the addition of the words "and women" after "laymen" this motion also was carried unanimously.

England and Wales.

HUGH OWEN THOMAS MEMORIAL LECTURE.

THIS lectureship was founded in 1920 by friends and admirers of the great Liverpool orthopaedic surgeon. The lecture is to be delivered triennially in the Liverpool Medical Institution, and is to deal with a subject bearing directly on orthopaedics; the lecturer is appointed by the Council. Most appropriately the first lecturer was Sir Robert Jones, K.B.E., C.B., who took for his subject, "Hugh Owen Thomas—the man and his work." The lecture was delivered on April 25th before a large audience, many of whom had known Mr. Thomas. Sir Robert, who had been intimately associated with Hugh Owen Thomas for over twenty years, gave an interesting account of his life. He received his early education in Anglesey, where he spent his boyhood for reasons of health. When 17 years old he was apprenticed to his maternal uncle, Dr. Owen Roberts of St. Asaph, a great friend of Sir Benjamin Brodie. Later he pursued his studies at Edinburgh in the days of Goodsir and Syme, with Turner as demonstrator of anatomy. He then proceeded to University College Hospital, London, and in 1857 obtained the diploma M.R.C.S. He returned to Liverpool, where he practised until his death in 1891. He was descended from seven generations of bone-setters who lived in Anglesey, and showed great ingenuity and inventive skill in the treatment of accidents (dislocations and fractures), deformities, and diseases of the joints. He devised and made his own appliances. He laid great stress on the careful fitting of splints and their correction from time to time under his own supervision. A keen observer of Nature, he realized the truth *natura non facit sallus*, and recognized the supreme value of rest in the treatment of diseased joints. The appliances, though simple, were the outcome of much thought, and their final perfection represented many years of careful study and minute observation. By means of his splints patients instead of being bedridden were enabled to enjoy fresh air and exercise—a great improvement, indeed, in the treatment of tuberculosis of the joints. Of the value of the Thomas splint in the treatment of fractures of the femur, the great war has furnished ample evidence. Hugh Owen Thomas revolutionized the treatment of palsied limbs through his observations on paralysed muscles. His treatment of delayed union of fractures by damming of the circulation anticipated Bier's method by many years. He introduced an ingenious plan for wiring fractures of the lower jaw, which was first published in 1871. Although Hugh Owen Thomas never held a hospital appointment, his private clinic—free to the poor on Sundays—was thronged with patients of all classes. It was the resort of distinguished surgeons from all over the world, and his ideas—not infrequently filched and published by others as their observations—were in those days far better known in distant parts than in his own town; but time has amply confirmed his observations, his ideas, and his methods of treatment. Thomas was not a robust man, and his portrait shown on the screen confirmed this; but he was an indefatigable worker, and left nothing to chance in his treatment of his patients—rich and poor alike. Giving the impression of being brusque at times, he was in reality a kind-hearted man. In conversation he brushed aside irrelevancy, and came quickly to the point. He was much interested in all kinds of mechanical invention, and one of the last papers he wrote was on the method of propulsion used in ships by the Romans. He passed away at the comparatively early age of 57.

Sir Robert Jones showed on the screen pictures of Thomas working at his lathe, and reducing an old-standing shoulder dislocation by means of a spinal apparatus and of various instruments he devised.

Mr. Rushton Parker, who was a friend of the great surgeon and did much in introducing the use of the Thomas splint into hospital practice, proposed a vote of thanks to Sir Robert Jones for his lecture. Mr. W. Thelwall Thomas seconded, and incidentally mentioned that the funeral of H. O. Thomas was the largest on record in the annals of the city of Liverpool.

The personal note in the lecture was much appreciated by the members present, and it was felt that the medical profession in Liverpool had just cause for doing honour to the memory of an illustrious member.

SOUTHAMPTON MEDICAL DINNER.

The annual dinner given by the doctors in Southampton and neighbourhood was held at the South-Western Hotel on April 19th. Nearly fifty practitioners were present, the gathering being confined to the profession only, and a very pleasant evening, with speeches and song, was spent. The opportunity was taken to make a presentation to Dr. MacKeith of Southampton, who was the first to organize and start the arrangements for looking after the practices of those medical men who served abroad during the war. It took the form of a piece of plate, and bore the following inscription:

> "Presented to Dr. A. A. MacKeith by the Southampton doctors who served overseas in the great war 1914–1918, as a mark of gratitude for, and appreciation of, all the work done for them during their absence by him and the Southampton medical men."

A large proportion of the doctors in the town and neighbourhood were present, and an equally successful meeting is hoped for next year. The honorary secretary is Dr. Joshua Keyms.

CENTRAL MIDWIVES BOARD.

At the meeting of the Central Midwives Board for England and Wales on April 27th, with Sir Francis Champneys in the chair, two penal cases were heard. One midwife was struck off the Roll, and judgement on the other was postponed. The ordinary monthly meeting was then held, and Sir Francis Champneys was re-elected chairman. Professor Henry Briggs, who occupied the chair temporarily, made a few warmly appreciative remarks regarding the valuable work done by the chairman of the Board for so many years. Sir Francis Champneys, on resuming the chair, feelingly acknowledged the words spoken by Professor Briggs on behalf of himself and the Board. It was resolved that the Board admit to its Roll, subject to compliance with the terms and conditions of Section 10 of the Midwives Act, midwives holding the certificates of the Midwifery Authority in New Zealand, provided that midwives holding the certificate of the Central Midwives Board are afforded reciprocal opportunities of being admitted to the Midwives Roll of New Zealand. The Board decided to inform a commercial firm of its disapproval of midwives acting as advertising agents, and to point out that midwives acting in such a capacity render themselves liable to proceedings before the Board.

With reference to suggestions made by Sir George Newman, regarding the administration of drugs by midwives, it was resolved:

> (*a*) That the reasoned statement in support of the Board's views that midwives should not be debarred from administering drugs, as provided by Rule E 19, which has been prepared by the members of the deputation to the Ministry of Health, be approved, and that copies of the statement be sent to the Local Supervising Authorities and other bodies who have made representations to the Board.
>
> (*b*) That the Board thinks it inadvisable to suggest to teachers and midwives the drugs which it thinks should be used by midwives in various emergencies.

A motion was adopted, suggesting that the power to inspect lying-in institutions, at present possessed by a few local supervising authorities under local Acts, should be extended to all local supervising authorities, and requesting the Ministry of Health to endeavour to arrange for legislation to give effect thereto.

TRAFFIC FATALITIES IN LONDON.

Suggestions for the avoidance of street accidents have been made by the city coroner, Dr. F. J. Waldo, during recent inquests. In the case of a boy who was run over and killed just outside his school it was suggested that the placing of a constable on fixed point duty (in place of patrol constables), and the erection of sign boards at definite points on the tram-lined roads in the London area, as has been already done in

Southwark, would be measures of safety. At another inquest it was brought out that metropolitan constables might be quite ignorant of first aid; since the war a qualification in first aid has been voluntary: the fee must be paid by the constable, and he has to attend the course in his own time. Dr. Waldo expressed the view that qualification in first aid should be compulsory, and the jury recorded its opinion that every metropolitan police constable should be obliged to give proof of efficiency in first-aid treatment, that attendance on the classes should be in service time and paid for by the County Council or out of the police fund. Dr. Waldo has also pointed out that the London County Council ambulance stations—six in number, with eight ambulances—are quite inadequate for the metropolitan area of 117 square miles.

Scotland.

THE PARIS FACULTY OF MEDICINE.

A MEETING of the University Court of the University of Edinburgh was held on April 24th, with Principal Sir Alfred Ewing in the chair. The Court approved very cordially of an invitation which had been conveyed by the Faculty of Medicine to the Dean of the Faculty of Medicine of the University of Paris and certain of his colleagues to visit Edinburgh University as the guests of the Faculty next July. The Principal stated that the University was under great obligation to the Faculty of Medicine of the University of Paris for the facilities which it had given, and the hospitality it had shown, to medical students from Edinburgh.

GLASGOW POST-GRADUATE MEDICAL ASSOCIATION.

The summer course under the auspices of the above association has now begun. Clinical courses in medicine, surgery, and a variety of special subjects are offered, and a limited number of whole-time and part-time clinical assistantships are available. For the ordinary courses enrolment may be made for periods of a month or more, but in the case of clinical assistantships the period of enrolment must not be less than three months. Full particulars may be obtained from the acting secretary at the university. Under the syllabus arranged post-graduate work is available from May to October.

GLASGOW MEDICAL APPOINTMENTS.

The appointment is announced of Dr. John F. Smith to the post of Physician for Diseases of the Skin at the Glasgow Royal Infirmary in succession to the late Dr. George McIntyre. Dr. Smith also becomes a Lecturer on Diseases of the Skin in Glasgow University. Dr. W. B. Inglis Pollock has been appointed Visiting Surgeon to the Glasgow Eye Infirmary, thus filling the vacancy caused by the death of Dr. W. Cochrane Murray.

Ireland.

WOMEN'S HEALTH ASSOCIATION.

AT the annual general meeting of the Women's National Health Association in Dublin, at which the Marchioness of Aberdeen and Temair presided, Dr. Alice Barry said that the Babies' Clubs had been progressing satisfactorily. Early last year their work was co-ordinated with that of the Infant Aid Society. The total number of deaths during the year was 1,150. Of that number 50 per cent. had been registered under the Public Health Act; efforts to trace the other 50 per cent. had failed. Thirty-seven deaths occurred among the babies attending the eight clubs. There was much unrest during the period under review, but in spite of that and of unemployment mortality among children had declined. The mothers on the books numbered 4,883, and the nurses paid 38,229 visits to members. The number of attendances at clubs was 16,139 mothers and 23,518 children. Mrs. Dwyer said that during the last year lectures and demonstrations on the care of children, and the making and remodelling of garments, were given at the Babies' Clubs affiliated to the association, and also at Rathfarnham and Swords. Lectures on first aid, home nursing, and infant welfare had been given to the patients at Peamount Sanatorium under the auspices of the Department of Agriculture, by which grants in aid were given.

Miss Hackett presented the report of the Central Committee, which gave a detailed account of the patients and their families who had been at one time or another in one of the sanatoriums. The President read the report of the Medical Research Committee, which had investigated some 2,000 cases. Sir W. Thompson reported that the number of patients admitted to Rossclare Sanatorium during 1921 was 91, and that the total number of patients there was 138. The great trouble in all sanatorium treatment was that patients were admitted too late. Only 12 per cent. were received in time; not less than 60 per cent. were found to be in an advanced stage, and the balance were in a very advanced stage, and not proper patients for a sanatorium, but for special institutions for such cases. In 10 per cent. of the cases dealt with the disease was cured, in 20 per cent. there was improvement, and in another 20 per cent. further improvement. A resolution was adopted asking that a home be established in each county for the treatment of advanced cases of tuberculosis.

Sir Andrew Horne, alluding to the work of the Babies' Club Committee, said that not only the value but the extent of the work was increased. There was great mortality among babies in Dublin, and the object of the association was to teach mothers how to cook food and how to feed children. He was glad to be able to say that the people themselves were taking the greatest interest in the work.

Correspondence.

ETIOLOGY AND TREATMENT OF DIABETES.

SIR,—Dr. Renshaw and Mr. Fairbrother are to be congratulated on their attempt to open a new approach to the problem of diabetes and acidosis in their article in the JOURNAL of April 29th (p. 674). Their paper, however, seems a striking example of the divorce between clinical medicine and laboratory work, for no clinical details of the cases are given, nor is there any mention of the diets, although it is a notorious fact that in the past much laborious work upon the faeces has been wasted by the failure to indicate the diet upon which the results were obtained. May I as a clinician much interested in these problems be allowed to use your space for some critical remarks?

The conception of a primary acetone formation with secondary failure of the sugar-burning mechanism seems worthy of very serious consideration for the following reasons: (1) Acetone has some very similar pharmacological reactions to chloroform and the narcotics, which, as we know, are liable to upset the carbohydrate metabolism. (2) Some cases where the ketosis (or acidosis) is apparently primary, or at any rate antecedent, such as toxic vomiting of pregnancy, have a diminished sugar tolerance. (3) In cases of diabetes under dietetic treatment it is very common to see the sugar and the diacetic reaction wane and finally disappear at the same time. (4) In the determination of a suitable "maintenance diet" for a diabetic it is possible to increase the total energy value of the diet by increasing the fat quotient at the expense of the carbohydrate and protein quotients. If this is done to an excessive degree we may get a stormy onset of acidosis (usually associated with sugar), but even if we avoid this it is found that the sugar tolerance sinks gradually in the course of weeks. This necessity for preserving a proper balance between the carbohydrates and fats has been emphasized by Joslin, and an intelligent patient soon recognizes the fact. It seems possible that an acidosis or ketosis may be a factor in this phenomenon. The possibility therefore of a primary acidosis or ketosis is one not lightly to be put aside.

The conception of an enterogenous formation of acetone bodies in acidosis is not new, having been discussed about thirty years ago by Lorenz. References to the early literature may be found in Schmidt and Strasburger's monograph, *Die Faeces des Menschen*, where it is emphasized that even when there is no acetone to be found in the faeces, yet the possibility of its originating in the intestines cannot be lightly dismissed.

The case presented by Dr. Renshaw and Mr. Fairbrother, however, appears entirely to disregard certain well-established clinical facts. If a young diabetic, whose urine contains both sugar and acetone or diacetic acid in large quantities, is placed upon a diet of oatmeal (2 oz.), lean meat or fish (2 oz.), and cabbage or other "5 per cent." vegetables for a few days it will be found that the sugar and diacetic acid diminish or disappear *pari passu*. With this diet the strict fasting is

very rarely necessary, in my experience, yet it would appear to be an ideal culture material for the bacillus under discussion. One of my patients, who was put temporarily upon a maintenance diet containing four pounds of cabbage, did not turn up for a whole year. I suggested that his diet could be much improved, but he preferred to let well alone and stick to the cabbage. He had stuck to the diet and had no return of glycosuria. His old acidosis had entirely disappeared, although he had eaten so much decaying cabbage during last summer's drought that he had been for a time yellow. Here was a man (at one time on the verge of coma) eating the food under suspicion who had not only avoided acidosis but recovered from an existing acidosis. The use of 5 per cent. vegetables has been found so useful on empirical lines that it is hardly justifiable to discard it for theoretical reasons.

It is stated (p. 676): "Occurring as it does on decaying vegetable life it is easy to understand how such a heat-resistant, spore-forming organism should enter the alimentary canal." The diet of the patients is not described, nor are we told that the healthy controls who gave negative results were on the same diet. It is also important that we should know how many experiments were done on each control as compared with the laborious attempts to isolate the organism from the refractory cases of diabetes. The conclusion which appears quite legitimate is that an acetone-forming organism, resistant to heat, lives upon cabbages, which form a large part of the present-day diet of most diabetics; hence it is found in their faeces and not in those of healthy persons living on a normal diet. There may be data available by which this conclusion may be combated. Hence this letter.

One other minor point: Is it wise to let lay newspapers have an advance copy of the JOURNAL? Personally I got one trunk call on Friday night and two more inquiries from patients before I had time to read the article on Saturday night.—I am, etc.,

A. E. BARNES.

Sheffield, April 30th.

*** Our correspondent's assumption that advance copies of the JOURNAL of last week were supplied to lay newspapers is natural but erroneous. We must leave Dr. Renshaw and his colleague to explain the occurrence.

SIR,—Numerous attempts have been made to refer diabetes mellitus to a bacterial infection of the alimentary tract, and treatment based upon this supposition has been repeatedly tried, with unsatisfactory results. The communication in the JOURNAL of April 29th (p. 674) by Dr. Renshaw and Mr. Fairbrother once more raises the question, but in a slightly different form, since they claim to have discovered a new and specific organism. If this claim could be substantiated it would no doubt revolutionize our treatment of the condition, but the evidence at present available is not convincing. It is true that they have isolated the organism in question from the faeces of five or six cases of severe diabetes and failed to separate it from the stools of eleven non-diabetic persons; they have also cultivated it outside the body in suitable media, thus fulfilling the first two of Koch's postulates, but they have apparently not attempted to comply with the remaining two, which are the true test of specificity. As matters stand at present, it may well be that the organism they describe is more easily cultivated from the faeces of the diabetic than the non-diabetic individual simply because the conditions in the intestine of the former are more suitable for its growth than in the latter—that is to say, it is an effect rather than a cause of the disease.

In this connexion it is to be noted that even with diabetic stools "heavy inoculation" of the medium appears to be necessary to obtain a satisfactory growth. Further, it is strange that if, as they say, the organism flourishes best in carbohydrate media and is the cause of the acetonuria in diabetes, acetone previously present should usually diminish when carbohydrate foods are administered or increased. If this organism is not present in the intestine of non-diabetics, why should acetonuria appear and increase as a result of starvation?—I am, etc.,

P. J. CAMMIDGE.

London, W., April 28th.

BONE GRAFTING IN UNUNITED FRACTURE.

SIR,—In the attempt to deal successfully with ununited fracture by bone grafting it should be worth the while of surgeons to learn, and adopt, a procedure not only most easy to the surgeon but least risky to the patient.

At a meeting of the Surgical Section of the Royal Society of Medicine on April 5th (BRITISH MEDICAL JOURNAL, April 15th, 1922, p. 602) Mr. C. Max Page and Mr. G. Perkins dealt with the technique of bone grafting in a manner both able and practical, as far as the grafting "in mass" is concerned for the repair of ununited fracture. The results seem to have been very successful on the humerus—only one failure out of six. On the radius nine consecutive cases all succeeded. Out of seven grafts on the ulna there were five failures, and among seven grafts on the tibia there had been three failures, so that the sum of success can hardly be said to be striking. But these authors made no reference to the implantation of small fragments between the ununited bones, after clearing away the soft connecting medium, as described and illustrated by me at a meeting of the Surgical Section on June 16th, 1908, and briefly recapitulated at a meeting of the Section in Liverpool in June, 1914.

It is true that the meeting in London was the last of the season, and that my paper was by its late turn relegated to the end, by which time most of the Fellows had left, no doubt tired out, like myself, by the previous proceedings crowded in. But the details were fully related, with clear descriptive photographs well displayed by means of the epidiascope. The cases were only two in number, one having occurred in the last year, and the other in the last month, of my hospital duty (May and September, 1907). The former was in the humerus of a strong working man of 35, the latter in the ulna of a woman aged 48, both on the left side.

In the case of the man the fragments were taken from the callus on the fractured ends; in that of the woman there was no callus, but fragments were clipped from the ununited ends. In both cases the fragments were placed in the blood which had oozed during the operation, after the fibrous medium connecting the bones had been dissected away. The muscles and integuments were stitched over the gap, and splints applied over the surrounding gauze dressing.

In both cases complete success resulted, and I had only to regret that the end of my hospital practice left me no further opportunities. I should have particularly wished to try it in the thigh, in which the difficulty and danger of more formidable procedures are only too well known. The method I refer to is beyond all comparison easier for the surgeon as well as safer for the patient, and the splints required the same as in the case of primary fracture (compound). I could not resist venturing to remark to the secretary at the meeting that the process I was about to relate was, I feared, much too easy to commend itself to other surgeons, who often seem more fond of complications than of simplicity. But I can still assure them that it is worth while, and can only once more refer them to the printed and illustrated report (*Proc. Roy. Soc. Med.*, vol. i, part 3, p. 232, 1908; vol. vii, part 3, p. 275, 1914).—I am, etc.,

RUSHTON PARKER,
Professor of Surgery in the University of Liverpool.

Liverpool, April 24th, 1922.

EXCISION OF HEAD OF FEMUR IN ARTHRITIS DEFORMANS.

SIR,—Mr. Platt's paper entitled "Excision of the head of the femur in arthritis deformans" (BRITISH MEDICAL JOURNAL, April 29th) raises a question which is of more than mere academic interest—namely, when does such an operation cease to be "excision of the head of the femur" and become what is now universally known as "arthroplasty"?

Mr. Platt himself says that the operation which he describes is "somewhat different" from the classical excision of the hip, and that it is "fundamentally reconstructive, and not destructive, in type." Every orthopaedic surgeon will at once recognize it as a fairly typical arthroplasty of the hip. The chief features of the operation are: (1) the free exposure of the hip by an antero-external flap; (2) the separation of the great trochanter, which is turned upwards with the muscles attached to it; (3) the modelling, rather than the cutting off, of the head of the femur; (4) the attempt to prevent the formation of new bone by the use of bone wax—a procedure that has been adopted by many surgeons in place of the flap of soft parts originally employed. Mr. Platt does not say whether he excises the capsule of the joint—a step which J. B. Murphy considered to be of the greatest importance. This operation differs from arthroplasty for bony ankylosis only in that the acetabulum does not need to be reconstructed as well as the head of the femur.

It is true that arthroplasty of the hip may be performed fairly rapidly, but there is no denying that it is a very severe operation, and I would take leave to doubt that it is "specially

suitable for older patients" with osteo-arthritis. One of our chief difficulties in treating osteo-arthritis of the hip is the fact that so many of the patients are just those in whom one would not care to undertake a severe major operation if it could be avoided.

Most surgeons have been disappointed with the functional results of arthroplasty of the hip. A lasting, stable, movable joint is the exception, while an ultimately stiff joint has been the rule. The degree of mobility depends very much on the amount of bone removed, and in many of the recorded successful cases the skiagrams have shown total absence of the head of the femur and sometimes of part of the neck as well—in fact, excision.

Now a straightforward excision of the hip—especially when there is no need to dissect away the synovial membrane, as in tuberculosis—is almost a minor operation as compared with arthroplasty, and if it will serve as well it is surely preferable. In the classical anterior operation an incision is made straight down to the joint in the interval between the sartorius and the tensor fasciae femoris. No muscles are divided. The capsule of the joint is opened and the head of the femur is dislocated and cut off with a chisel. The neck is returned to the joint, some stitches are put in the capsule, and then the skin wound is closed.

As judged by published statistics, the functional results of excision of the hip are bad. But nearly all these statistics have been obtained from the records of children who have been operated on for tuberculous disease of the hip. In many cases much more than the head of the femur has been removed—even the whole neck down to the great trochanter—and they have had no proper after-treatment.

The results of excision of the head of the femur (only) in non-tuberculous affections in adults, when the proper after-treatment is carried out, are in many cases excellent, and will, I believe, challenge comparison with the best results of arthroplasty. I now regard a simple straightforward excision as the operation of choice when one must operate for osteo-arthritis of the hip, and it is indicated also in those cases of chronic painful arthritis believed to be of infective origin.

My routine after-treatment is to put the limb in extreme abduction in plaster-of-Paris for two months. The plaster is then cut up as a splint, and the patient is measured for a walking calliper. During the next four to six weeks the limb is massaged and active and passive movements are practised. The calliper is then worn for six to twelve months. It is possible in this way to obtain a joint that is stable and yet movable and free from pain, with very little shortening of the limb.

I have been moved to write this somewhat lengthy criticism lest some of those who read Mr. Platt's paper should be led to think that excision of the head of the femur is an obsolete operation, and that the expression "excision of the head of the femur" is now synonymous with arthroplasty of the hip.—I am, etc.,

London, W.1, April 30th. A. S. BLUNDELL BANKART.

PROSTATIC ENLARGEMENT.

SIR,—I am obliged to Professor Kenneth Walker for his courteous toleration of my criticism of his opinions. His remarks on the abuse of suprapubic prostatectomy are very opportune, and will surely meet with the approval of those who see many of the end-results of this operation. Most of the poor results are, in my opinion, due to failure to discriminate between the condition for which the operation was originally introduced, the so-called adenoma of the prostate, and those conditions where, in spite of the symptomatology, little or no enlargement of the prostate can be found clinically.

In the adenomatous enlargement the operation is so successful that its too frequent performance must be rare. I do not wish it to be deduced from this that I advocate removal of all such prostates, but the indications for prostatectomy raise a question too big to be dealt with in a letter. The number of cases in which a two-stage operation is necessary, while sometimes a mark of an insidious onset and progress, is more often a reflection upon the prolonged use of palliative measures, under which I include drugs, catheters, and sounds.

In cases of the prostatic bar, the small fibrous or atrophic prostate, the chronic inflammatory prostate, and malignant disease, suprapubic prostatectomy is seldom necessary, as equally beneficial results follow other procedures. Malignant disease is only rarely sufficiently limited to be removed by operation, and radium therapy and diathermy give better results. The chronic inflammatory prostate is more often the consequence rather than the cause of the associated inflammatory changes in the urinary tract, and after its removal there is a tendency to sclerosis and stricture formation. Subsequent treatment by dilatation and local applications is necessary, the effect of which is equally satisfactory when no operation has been performed.

Forage is of value in cases where the obstruction is limited to the bladder neck, as in the prostatic bar, the small fibrous prostate, and the small hypertrophy of only the middle lobe, and is best carried out by diathermy applied by the Buerger or MacCarthy cysto-urethroscope. It is followed by marked improvement in some cases; in others it leaves much to be desired. I think there is still much to be learnt about the pathology of these cases, for some appear to be associated with an idiopathic atony of the bladder, others with over-action of the sphincter. In the adenomatous prostate the urethra is compressed laterally throughout its length, the obstruction is over a wide area, and its removal is difficult; the result of forage here is only temporary and cannot be compared to that of prostatectomy, which is always the operation of choice in the adenomatous prostate.—I am, etc.,

Cardiff, April 15th. T. E. HAMMOND.

BOVINE ACHONDROPLASIA.

SIR,—The monstrous calf of the Dexter breed of cattle exhibits the classical features of achondroplasia as found in the human. Examination of the endocrine glands of these stillborn calves has shown that in all (nine) cases the adrenal is strikingly abnormal, in that areas of cartilage are present scattered irregularly throughout the gland. The thyroid is functional—the extract producing the typical ageing effect on growing tadpoles; the pituitary normal.

This association of abnormal cartilage-bone growth and cartilage in the adrenal is remarkable, and I write to ask if any similar observation has been made in the case of the human.—I am, etc.,

F. A. E. CREW, M.D., D.Sc.,
Director.

Animal Breeding Research Department,
The University, Edinburgh,
April 24th.

EVIDENCE OF PANCREATIC DISORDER IN RICKETS.

SIR,—In his paper, "Evidence of pancreatic disorder in rickets," in the JOURNAL of April 1st, Mr. E. C. Dodds states that in cases of "acute rickets" he invariably finds a greatly increased diastase index of the urine and an average of about 75 per cent. of fat in the faeces. It is, perhaps, not very clear what Mr. Dodds means by "acute" rickets. The disease only commences with the utmost rarity after the eighteenth month, and it is unusual to see active rickets after two and a half years. And yet six out of the seventeen cases reported were between three and five years of age, and only four were under eighteen months.

I estimated the fat in the faeces of three cases of active rickets, aged two years and four months, one year and nine months, and eight months, and found only 11, 27, and 50 per cent. respectively. (The last case was an infant fed on cow's milk.) The diastase index of the case with 27 per cent. of fat in the faeces was 20. These three cases show that Mr. Dodds's deductions cannot be true for every case of rickets.

It would be interesting to know whether the cases reported were having cod-liver oil and malt as part of their treatment.—I am, etc.,

London, April 28th. J. V. C. BRAITHWAITE.

THE COMPLEMENT-FIXATION TEST FOR THE EXCLUSION OF PULMONARY TUBERCULOSIS.

SIR,—In Drs. Punch and Gosse's article on complement fixation in the exclusion of active tuberculosis (April 1st) it would have added to the interest of the article if they had been able to record the results of parallel tests of the dermic reaction to tuberculous inoculation, especially in the cases which reacted negatively to the deviation of complement test. I am aware that little or no value attaches to a positive dermic reaction, but logically the latter reaction ought, I suppose, to prove negative in the cases that replied negatively to the complement test. Possibly these observers had reasons of their own for not invoking the confirmation (or otherwise) to be obtained by the dermic test.—I am, etc.,

Algiers, April 18th. ALFRED S. GUBB, M.D.

REDUCTION OF MEDICAL FEES.

SIR,—With regard to the letters on the reduction of medical fees, I do not see why any single member of the profession should try to influence his brethren to act collectively in reducing fees. If any member feels that his skill in the practice of his profession is not of a high enough standard to retain his patients at the fees he has been charging lately, then it is his own concern alone as to whether he should reduce those fees. The only other reason I know of for a reduction would be that he cannot get his accounts paid owing to the financial standing of his patients; but the question he would have to ask himself then would be, Would the accounts be better paid when the reductions were made? If a suggestion either to raise or reduce fees is made by the British Medical Association it need not be looked on as more than a suggestion.—I am, etc.,

Manchester, April 27th. MARTIN J. CHEVERS.

THE INSURANCE ACT AND THE PUBLIC HEALTH.

SIR,—Twice has my Division sent to the Annual Representative Meeting a motion urging an inquiry as to the effect of the Insurance Act on the standard of living of the poor. It was based immediately on the fluctuations in our tuberculosis mortality—surely a fair test—foreseen in 1911 for 1915, and again in 1916 for 1918 and succeeding years. The major premiss need not be laboured now as it had to be ten and fifteen years back. To one who was the first to point out in the medical (and as I believe in the lay) press the relation between that mortality and the real wage rate, it cannot but be gratifying to see its widening acceptance in and out of Parliament. To establish the truth of the relation a fall was necessary in the last year of the war and the succeeding years. But the period of remission is drawing to a close. Others than I have told me that they have my experience—namely, that there are more cases to-day, certainly new or recrudescent or suspicious, than for many years past.

If the relation be a fact (and it is but common sense to believe so), it remains to ask if the Act lowers real wages. Only a child or an extremist politician will question that. Disguise it in what jargon you may, it is a tax on production. Economically the only *unequivocal* gainers are the "employed" children of the well-to-do, the great firms which used to pay full wages during sickness, or the powerful firms which can recoup themselves by raised prices for increased outlay. For all other classes there must be compensating disadvantages, the greatest for the poorest; the only question is how great.

The theory that by administrative benefits during sickness, involving an increase of poverty both in sickness and in health, a disease which flourishes on poverty can be prevented, is demonstrably false. But it is that which we are bidden to corroborate, it is that which we do corroborate if we tacitly acquiesce. To plead ignorance of economics (and our ignorance, as a profession, is abysmal) so as to shirk inquiry is no answer; nay, confessed ignorance is an added plea for inquiry. The whole question is fundamentally, as well as ostensibly, economic. If we, confessing ignorance, refuse to inquire: if it turns out that the effects of the Act, patent in 1915, have only been overlaid from 1918 to 1922 (about 1918 there can be no question): we are more bloodguilty than the politicians who honestly believe in their own knowledge.

The whole question is really to be reopened at Glasgow; for you cannot dissociate the State or municipal hospital from the Insurance Act. If the Act is right, then the State hospital is even more right; if the State hospital is wrong, then the Act is wrong. Under this bastard system, the result of the illicit intercourse of socialism and capitalism, both must be wrong, because its inevitable result is, *ecce signum*, the accumulation of great wealth in the hands of the few to the impoverishment of the many.

In Scotland manly independence is still a virtue, and sponging on others still is often considered a disgrace, and we may have a chance for discussion there. May I appeal to men who sympathize with these views to urge their Divisions to consider the underlying principle at stake? If you have admitted the obligation on the State to ensure primary treatment you must admit it also for advanced treatment. The *principle* of the State hospital is affirmed in the Insurance Act; if, as so affirmed, it is, in the teeth of the evidence, allowed to be acquitted by default, we are for the future debarred from criticism of any extension of that principle.—I am, etc.,

Rayleigh, Essex, April 23rd. B. G. M. BASKETT.

THE ROUTINE OF OPERATIONS FOR TONSILS AND ADENOIDS.

SIR,—I have been asked to write to you in regard to the operative treatment of adenoids and enlarged tonsils, to which special reference is made in the BRITISH MEDICAL JOURNAL for April 1st (p. 527) and to inform you of the arrangements obtaining under the Education Authority of Glasgow.

Most of the cases recommended for operation are already under observation and treatment for ear disease by one of the authority's part-time aurists; some have been seen once only by the aurist; a few are cases obviously requiring treatment and recommended by one of the full-time school medical officers for operation, and in no such case has the operating surgeon (who is always one "with special experience of diseases of the nose, throat, and ear") considered operation unnecessary. The anaesthetic used is generally ethyl chloride.

All the children are examined at one of the centres as to their general fitness for operation and freedom from infectious disease on the morning before admission to hospital. They are admitted to the authority's hospital (ten beds) that evening, and the operation is performed about 9.30 next morning; all are kept in bed until the day following operation, when they are discharged from hospital if fit. In a few cases it has been necessary to keep the children one or two nights longer in hospital. The children are visited at their homes by one of the nurses until fit to return to school, the parents being instructed as to the after-care of the case; and notice is sent to the school in order that breathing through the nose may be encouraged and the child's progress observed.—I am, etc.,

ERNEST T. ROBERTS,
Glasgow, April 26th. Principal Medical Officer.

Obituary.

EDWARD HENRY TAYLOR, M.D., M.CH., F.R.C.S.I.,

President of the Royal College of Surgeons in Ireland; Regius Professor of Surgery, Trinity College, Dublin.

WE regret to announce the death of Mr. Edward Taylor, President of the Royal College of Surgeons, Ireland, which occurred at his residence, 77, Merrion Square, Dublin. He was one of the most distinguished surgeons in Ireland.

Edward Henry Taylor was the eldest son of Mr. Wentworth Taylor, of Tinahely, co. Wicklow. He was educated at Trinity College, where he won the senior scholarship in anatomy, physiology, and histology, and qualified in 1890. Soon afterwards he won the surgical travelling prize and proceeded to Vienna, where he studied under Professor von Eiselberg, the famous head of the surgical clinic and successor to the great von Billroth. On his return to Dublin Mr. Taylor was appointed assistant surgeon to Sir Patrick Dun's Hospital and lecturer in applied anatomy to Trinity College. Subsequently he acted as anatomical examiner in association with the late Professor D. J. Cunningham. Some few years later he was appointed surgeon to Sir Patrick Dun's Hospital. When the late Professor Edward Bennett was unable, owing to failing health, to discharge his duties as Professor of Surgery in Trinity College, Mr. Taylor was appointed to act as his deputy, and on Professor Bennett's death was selected by the Provost and Senior Fellows as his successor. This post he held for twelve years. Upon the death of Sir Charles Ball in 1916 Mr. Taylor succeeded to the Regius Professorship of Surgery.

He obtained the Fellowship of the Royal College of Surgeons in 1896 and was elected President in 1921. He wrote on many subjects of surgical interest and published well-known textbooks dealing with applied anatomy and operative surgery. He was the author of a treatise, *Applied Anatomy: Medical, Surgical, and Gynaecological*. His surgical writings included: "Some Researches in Cerebro-Cranial Topography by means of Röntgen Photography" (with W. S. Haughton); "Suprapubic Prostatectomy—the Aim and Scope of the Operation"; "Case of Cystic Tumour of the Brain, of doubtful origin, successfully treated by operation"; "New Methods of Herniotomy (Inguinal and Femoral)"; "Treatment of Acute Peritonitis"; "Operative Treatment of Rectal Cancer"; and other papers.

Mr. Edward Taylor, in addition to a very active professional career, found time for many agricultural pursuits, and was a successful breeder of shorthorn cattle, with which class he was a frequent prizewinner in the principal Irish shows.

Sir W. I. DE C. WHEELER, Vice-President, Royal College of Surgeons in Ireland, in adjourning the meeting of the Surgical Section of the Royal Academy of Medicine on April 28th, said:

The Surgical Section of the Royal Academy of Medicine in Ireland meets to-night under the shadow of Mr. Edward Taylor's death. He was President of the Section and President of the College in which we meet. He himself, I am sure, would have wished us to proceed with the business before us, for the progress of surgery was near to his heart, and he knew that the published transactions of this Section did much towards maintaining the reputation of the Dublin school in Great Britain and abroad. None of us, however, will feel disposed to proceed to ordinary business on the eve of his funeral. Our minds are burdened with the loss we have suffered, and we are full of sympathy for the widow and family he has left behind.

The profession is indebted to Edward Taylor for the demonstration of one fundamental truth: he has shown that success and respect, and everything in professional life which can be considered worth while, can be obtained by taking the straight road. Success to him meant hard work and results conscientiously achieved for the good of the school, for the advance of science, and for the benefit of all. Success was his, and his efforts were crowned by recognition from Dublin University, from the College of Surgeons, and from the profession at large. Thus he became president of this college unopposed; he was selected to follow E. H. Bennett as professor of surgery, and later to succeed Sir Charles Ball as Regius Professor in the Medical School of Dublin University. He received the degree of Master of Surgery (*honoris causa*) as a final tribute from the school in which he was reared. His books on operative surgery and applied anatomy breathe infinite accuracy, perseverance, and truth, and deservedly won him a high reputation in foreign lands. By his writings much was done to lift Irish surgery into the first rank. It gave a thrill of pride when travelling to find Edward Taylor's name on the lips of the great contemporary surgeons and his works quoted by the writers of the day.

His long illness prevented his taking part, as President, in College affairs, unless for a few early months of office. It was during this time I became acquainted with the personal charm and indefinable qualities which accounted for his popularity amongst those with whom he freely moved. He was open-minded and just; if he was capable of injustice it was to himself, for he was pre-eminently modest. He stood for loyalty in friendship; in work he ranked co-operation high above checkmate, and vigorously assisted in every forward move. He had a quiet dignity which added weight to his words, and although he may have lacked some of the frills and flashes of genius he was one of those men who got things done. Apart from his large circle of friends, he was able to attract and stimulate the wider circle of those about him, and this was one of his most winning powers. Outstanding ability, real work, and honest effort brought their rewards. In addition to academic honours and general respect his qualities as a surgeon received public favour, and he enjoyed a large share of the practice of southern Ireland. The surgical torch in this academy has been dimmed for the moment, but this Section can do honour to a memory by fanning the flame into brightness and illuminating for others the path by which the late President found his way.

JOHN ADAMS, M.B.E., M.B., C.M.GLASG.,

Formerly Chairman of the Scottish Committee of the British Medical Association.

IT was with much regret that we announced last week the death of Dr. John Adams of Glasgow, which took place at his residence, 1, Queen's Crescent, on April 20th. Dr. Adams spent some years as a chemist before entering upon the study of medicine at Glasgow University, where he had a distinguished career as a student, was Cullen Medallist, and graduated M.B., C.M. with commendation in 1883. He served for a period as house-physician in the Western Infirmary, then entered on general practice in partnership with the late Dr. Suttie, and later developed an extensive practice on his own account. Early in his professional career he became interested in medical politics, in which later he took a prominent part. His work in connexion with the British Medical Association forms one long record of faithful service. He was from the outset a most loyal member, and in 1908 was elected a representative to the central body, where his constant interest and unbiased judgement received due recognition by his election to the Council of the Association, on which he served from 1912 to 1917. During this same period he was a member of the Insurance Acts Committee, while he also was appointed chairman of the Scottish Committee. It would be difficult to overestimate the value of his work for the Association, and for his fellow practitioners in Scotland, at a time when enthusiasm was on the wane. He was called upon to perform these duties at a strenuous period in the history of the Association, and the frequent night journeys to London which these necessitated, combined with the exacting work of his practice, undoubtedly took their toll of his health, which broke down under the strain. He was thus compelled to relinquish this part of his public work. He, however, continued to interest himself in the local Medical and Dental Defence Association, in which he also had been a very active and enthusiastic member; for some years he was chairman of the general council of that body, and on relinquishing this post was appointed one of its vice-presidents.

During the war period Dr. John Adams served as a member of the Medical Service Emergency Committee for Scotland and of its Executive, and his valuable services there and in other departments of war work were recognized in the honour of membership of the Order of the British Empire which was conferred upon him. Perhaps, however, Dr. Adams appreciated more the kindly esteem of his fellow practitioners, who in token of his valuable and unremitting work on their behalf entertained him to a complimentary dinner. He married only about three years ago, and is survived by his widow.

Dr. ALFRED COX writes: There were few better known or better liked men than Dr. John Adams during his many years of activity in Association affairs, and his death is sad news to many of his old colleagues who looked forward to seeing him again at the forthcoming Glasgow meeting. His work on the Council, the Scottish Committee, the Insurance Acts Committee, and the Scottish War Emergency Committee at a time when the work of the two last-named bodies was particularly strenuous will not readily be forgotten; but what will remain longest in the minds of those who worked with him is the memory of a very attractive personality, with a gift for friendship and hospitality. His colleagues and constituents in Glasgow and the West of Scotland will remember with gratitude the work he did for them, not only in the Association but in many other ways, as, for example, on the Glasgow Insurance and Panel Committees. I have little doubt in my own mind that his sudden breakdown in 1917 was very largely attributable to the way in which he sacrificed himself for the men who trusted him. Nobody but one who has had a similar experience of central work for the Association carried on from a long distance can quite understand what Adams's work entailed in the way of sacrifice. But he thoroughly enjoyed it, and I know what a grief it was to him when he was compelled to give it up. In the last letter I had from him, in January, 1922, in reply to a Christmas greeting, he said he was in bed for most hours of the day. He went on to say:

"I have been living on trinitrine tabloids, digitalis, etc., which have gradually pulled me together, and I am getting to feel decently fit again and hope soon to be up and about. The Glasgow visit of the British Medical Association is evidently being worked well, and a great many people are interested in making it a great success. I am extremely sorry that it is impossible for me to lend a helping hand."

Scotland has given the Association many loyal supporters, but none who better proved his devotion to its interests.

HUGH ERNEST FRASER, M.A., M.D.,

Medical Superintendent, Dundee Royal Infirmary.

WE regret to announce the death, on April 20th, after a long illness, of Dr. Hugh E. Fraser, of Dundee Royal Infirmary. Dr. Fraser was born in Inverness, and received his medical education at the University of Edinburgh; he graduated M.A. in 1887, M.B., C.M. in 1891, and M.D. with commendation in 1897. In 1890 he acted as demonstrator in pathology under Professor Greenfield, and in 1892 became senior house-surgeon at Edinburgh Royal Maternity Hospital. Subsequently he continued his studies in Berlin, where he took special interest in hospital construction and management. After a short period as resident medical officer at the Northern Infirmary, Inverness, he was appointed one of the honorary staff there, but in 1897 he received the appointment of medical superintendent of Dundee Royal Infirmary. During his tenure of office the institution became the clinical school for the University of St. Andrews, and many important additions to the infirmary were carried out, including the Maternity Hospital, which is a branch of the Royal Infirmary

and stands within its grounds, and the six wards (120 beds) which are primarily intended for cancer patients: the cost of these additions was defrayed by Sir J. K. Caird. Dr. Fraser gained a high reputation as medical superintendent, and his services were much esteemed alike by the board of directors, the medical staff, and the patients. Dr. Fraser also held the post of honorary medical electrician to the infirmary, and he was the author of a number of contributions on the subject of medical electricity. Dr. Fraser was one of those who can give more than whole time to their own work and yet maintain an active interest in culture. He was president of the local branch of the Franco-Scottish Society, which he accompanied in its tour to France last year. He had been vice-president of the Dundee Branch of the British Medical Association. He was unmarried.

MAJOR-GENERAL GEORGE DOUGLAS HUNTER, C.B., C.M.G., D.S.O., R.A.M.C. (retired), who died at Cadbury, Yatton, Somerset, on April 18th, aged 61, was the second son of the late Brigade Surgeon George Yeates Hunter, Bombay Medical Service; he was educated at St. George's, and took the M.R.C.S. in 1883, and the L.S.A. in 1884. He entered the R.A.M.C. as surgeon in August, 1884, attained the rank of Colonel in 1913, and was temporary Surgeon-General while acting as Director of Medical Services in East Africa; he retired on December 26th, 1917. He had a very long list of war services, extending off and on over almost his whole career: Sudan, 1884–85, Nile column, medal with clasp, Khedive's bronze star; Sudan, 1885–86, operations of Frontier Field Force; Dongola campaign, 1896, mentioned in dispatches, *London Gazette*, November 3rd, 1896, D.S.O., Egyptian medal with two clasps; Nile, 1898, battle of Khartoum, dispatches, *London Gazette*, December 9th, 1898, medal, and clasps to Egyptian medal; war of 1914–18, dispatches four times, *London Gazette*, January 1st, 1916, June 20th, 1916, June 30th, 1916, and March 7th, 1918, medal and star, C.M.G. and C.B. He was seconded for service with the Egyptian army from June 9th, 1888, to January 7th, 1897, and again from February 2nd, 1905, to July 5th, 1908, as principal medical officer. From 1909 to 1913 he was commandant of the R.A.M.C. school of instruction. In the late war he was Director of Medical Services of the East African Expeditionary Force from December, 1915, to March, 1918. He married in 1895 Elfrida, daughter of the late T. W. U. Robinson, of Houghton-le-Spring, by whom he had one son and one daughter. Lieut.-Colonel G. Y. C. Hunter, Bengal Medical Service (retired), is his younger brother.

DR. MURDOCH MACKENZIE, of Stornoway, died on April 10th at the residence of his sister in Bradford, after several months of indifferent health. He received his medical education at Edinburgh University and medical school, and took the diplomas of L.R.C.P. and S.Ed. in 1883. Soon after graduation he commenced practice in Stornoway, and he held the posts of medical superintendent and honorary surgeon to Lewis Hospital, Admiralty surgeon and agent, medical referee to the Ministry of Pensions, surgeon to H.M. prison, parochial medical officer, medical officer of Lewis Sanatorium, and many other public appointments in Lewis. He was a Justice of the Peace for the counties of Ross and Cromarty. For many years he held a commission in the Territorial Force. At the time of his death he was Lieut.-Colonel, R.A.M.C., T.F., attached to the Ross-shire Mountain Battery, and he had been awarded the Volunteer Decoration. Dr. Mackenzie, who was an old member of the British Medical Association, enjoyed the high esteem of his professional colleagues in the western islands of Scotland. He was often called into consultation by the more isolated practitioners in the neighbouring islands, where a visit might require sometimes several days' absence.

WE regret to record the death of Dr. J. DAWSON CRAWFORD, J.P., which took place at Swanley, Kent, on April 4th, at the age of 54. Dr. Dawson Crawford was born in co. Monaghan, and received his medical education at Trinity College, Dublin; he graduated B.A. in 1891, M.B., B.Ch. in 1893, and M.D. in 1902. He came to reside at Swanley nearly twenty-five years ago, and built up an extensive general practice there; he held several public appointments, and was a Justice of the Peace for the county of Kent. He had been chairman of the Swanley Unionist Association for some years, and supported many projects for the welfare of the district. He was an old member of the British Medical Association.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

THE election of a Professor of Pathology, to fill the vacancy caused by the death of Sir German Sims Woodhead, will take place on June 1st. The income of the professorship will be £1,200 per annum. Candidates are requested to communicate with the Vice-Chancellor by Thursday, May 25th.

The plan of examinations for medical and surgical degrees to be held this term has been issued. Part I (Surgery; Midwifery) of the Third M.B. examination will begin on Tuesday, June 13th; Part II (Principles and Practice of Physic; Pathology and Pharmacology) will begin on June 14th. The M.Ch. examination will begin on June 13th. The certificates of candidates, accompanied by their postal addresses, must be sent to the Registrary for Parts I and II of the Third M.B., and for the M.Ch. examination, by Monday, May 15th.

The following medical degrees were conferred at a congregation held on April 28th:

M.D.—F. N. Sidebotham.
M.B., B.CH.—J. A. B. Snell, W. B. A. Lewis.
M.B.—E. Donaldson.

UNIVERSITY OF LONDON.

THE following candidates have been approved at the examination indicated:

Diploma in Psychological Medicine (with special knowledge of Psychiatry).—Elizabeth Casson, F. J. Fahy, O. P. N. Pearn.

UNIVERSITY OF BRISTOL.

THE following candidates have been awarded honours in the recent Final M.B., Ch.B. examination:

FIRST-CLASS HONOURS.—M. Critchley, P. Phillips.
SECOND-CLASS HONOURS.—Phyllis Beames, Winifred G. Nott.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

AN ordinary Comitia of the Royal College of Physicians of London was held on Thursday, April 27th, at 5 p.m., the President, Sir Humphry Rolleston, K.C.B., being in the chair.

The following were elected to the Fellowship of the College, on the nomination of the Council:

Edwin Hyla Greves, M.D.Edin., Sir Sydney Russell-Wells, M.D.Lond., Ewen John Maclean, M.D.Edin., Arthur Herbert Hayes, R.A.M.C., Robert Alfred Bolam, O.B.E., M.D.Durh., William Henry Wynn, M.D.Lond., Charles Paget Lapage, M.D.Manch., Edward Fretson Skinner, M.D.Camb., Owen Lambert Vaughan Simpkinson de Wesselow, M.B.Oxf., John George Porter Phillips, M.D.Lond., Harold Wordsworth Barber, M.B.Camb., Arthur Geoffrey Evans, M.D.Camb., Aldo Castellani, C.M.G., M.D.Florence; Henry Hallett Dale, C.B.E., M.D.Camb. (under By-law xli (*b*)).

The following candidates were admitted Members of the College:

John Ferguson Chambers, M.B.Melb., William Feldman, M.D.Lond., Hugh Gainsborough, M.B.Camb., Norman Hammond Hill, M.B.Lond., James Gordon Hislop, M.B.Melb., Hugh MacLean, M.D.Aberd., Charles Titterton Maitland, M.D.Lond., William Gifford Wyllie, M.D.Edin.

Licences to practise physic were granted, jointly with the Royal College of Surgeons, to the following 108 candidates who had passed the required examinations and conformed to the by-laws and regulations:

*Edith I. L. Abbott, S. Ackroyd, M. Ahmad, D. R. Ainsworth, *Janet K. Aitken, *Ruth M. Arkwright, W. F. Attwater, C. W. C. Bain, F. J. Benjamin, L. A. Bennett, H. C. Berlie, H. J. Bhatia, A. M. F. Browne, C. B. Byrd, A. W. Carleton, R. B. Chandrachud, A. J. Chiappa, R. W. Cockshut, *Doris B. Collier, *Gwendolen C. Cotton, W. L. S. Cox, D. I. Currie, J. G. D. Currie, R. L. Dagger, H. S. Davies, C. C. Elliott, W. C. Faull, C. E. Fenton, A. C. Fernando, *Ena D. Foster, Rowden M. Fry, R. M. Galloway, M. Garden, M. Garfield, F. A. Gaydon, J. E. Gaze, A. A. Gemmell, *Nancy K. Gibbs, *Dorothy Gibson, *Irene M. Golding, J. H. H. Gough, E. F. Griffith, F. J. S. Hall, E. Hardy, B. Homa, A. O. Jones, H. B. Jones, T. E. Jones, B. Kessel, H. C. Killingback, J. Kindness, D. Krestin, W. Laing, K. W. Leon, J. N. Loring, E. V. Luppnan, D. C. McIntosh, D. W. McKay, M. Mackenzie, N. S. Macpherson, *Phyllis M. Manson, *Gladys H. Marchant, *Clara E. Mathias, Y. Maximos, F. R. L. Miller, J. K. Milward, A. Mitchell, W. E. M. Mitchell, *Olga M. Naylor, G. J. V. Nelken, R. W. Nichol, M. Nurick, C. P. Oliver, T. C. Oliver, *Hilda W. Page, C. V. Patrick, V. D. Pennefather, *Edith C. Phelps, E. D. Priddie, *Gladys H. Randall, H. Rast, *Sybil M. Rees, B. T. Richards, *Esther Rickards, D. Robertson, A. E. Roche, Abd-El-Hakim Sabry, J. W. Sinclair, E. F. Smith, *Dulcie C. Staveley, G. H. T. Stovin, M. L. Sutcliffe, *Mary I. Symons, J. G. Tait, M. Theiler, D. C. Thomas, *Winifred A. M. Thompson, Nils F. Tilander, L. J. Timings, *Eileen M. Turner, K. L. Ward, *Hilda M. Whitfield, F. W. Widgery, H. N. Williams, *Muriel B. Williams, S. J. Woodall, L. S. Woolf, *Eva Young.

* Under the Medical Act, 1876.

Diplomas in Tropical Medicine and Hygiene were granted, jointly with the Royal College of Surgeons, to the following 24 candidates:

R. W. Cilento, C. Clyne, G. C. Dunham, J. J. B. Edmond, M. A. M. el-Kattan, B. Gale, G. Giglioli, W. H. Grace, Mary L. Griffiths, J. M. R. Hennessy, H. S. Hingston, H. C. V. Joy, J. B. Kirk, R. B. Lal, D. R. Mehta, E. A. Mills, M. S. H. Mody, D. G. F. Moore, G. G. Naoleker, A. Noble, W. H. Peacock, A. R. Razik, C. A. Wood, T. G. Wynne.

The President announced that two gifts have been made to the College: (1) The President's chair, used when the College buildings were in Warwick Lane. This was presented by Dr. F. Gore

Wallace, with a letter stating that it had been given to Mr. John Charles Hunter, who was Bedell of the College from 1823 to 1829. (2) A malacca with two small glass phials in the shaft, presented by Mrs. Fagg. These gifts were accepted, and the thanks of the College were accorded to the donors.

A communication was received from the Secretary of the National Association for the Prevention of Tuberculosis, dated April 11th, 1922, urging that tuberculosis be made the subject of special teaching in Medical Schools. This was referred to the Committee of Management.

Dr. Sidney Phillips moved for the second time: That By-law LVII be altered so as to read—"The accounts of the College shall be audited by the Finance Committee, with the assistance of a professional accountant. A copy of the audited accounts shall be supplied to the Censors Board." This was carried.

Sir Frederick Andrewes was re-elected a Representative of the College upon the Lister Institute of Preventive Medicine.

After some formal College business the President closed the Comitia.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.

PROFESSOR HAROLD BURROWS'S two Hunterian lectures on "The results and treatment of gunshot wounds of the blood vessels" will be delivered in the theatre of the College, Lincoln's Inn Fields, at 5 p.m., on Wednesday and Thursday, May 10th and 11th. The first lecture will describe the varieties of injuries and their signs and symptoms; the second lecture will deal with treatment in general and the operative measures available.

The Services.

THE WAZIRISTAN CAMPAIGN.

THE dispatch of General Lord Rawlinson, Commander-in-Chief in India, on the operations of the Waziristan Force from May 8th, 1920, to March 31st, 1921, was issued as a supplement to the *London Gazette* of April 26th, 1922. The following is an extract regarding the medical services:

"Waziristan has an unenviable reputation for climate. The extremes of heat and cold, combined with the virulent malaria indigenous to the country, are conducive to a high sick rate.

"That the sick rate has not been higher is directly attributable to the care and forethought of the medical authorities. The medical units throughout the force are mobilized ones, yet they have been expanded and developed so that the sick and wounded receive treatment much in advance of that ordinarily procurable in field units."

The King of Italy has conferred the honour of Commander of the Order of the Crown of Italy upon Surgeon Rear Admiral A. G. Wildey, C.B., in recognition of services rendered during the war.

Medical News.

THE Court of the University of Leeds has decided to confer the honorary degree of D.Sc. upon Sir C. S. Sherrington, President of the Royal Society and Professor of Physiology at Oxford; Sir Harold Stiles, Professor of Clinical Surgery in the University of Edinburgh; and Sir R. A. Gregory, F.R.A.S., editor of *Nature*.

THE first lecture of the course of eleven post-graduate lectures arranged by the Fellowship of Medicine and Post-Graduate Medical Association was given at the house of the Royal Society of Medicine by Sir Humphry Rolleston, K.C.B., on Monday last, when he dealt with the recent physiology of the liver and its application in practice. The second lecture, to be given on Tuesday next, will be the first of two on fractures, by Sir W. Arbuthnot Lane, Bt. The course will be continued until July 19th. The lectures are given at 5 p.m. The Fellowship has also arranged a course of practical lectures and demonstrations at the Children's Clinic, Western General Dispensary, Marylebone Road, N.W.1 (close to the Edgware Road Station of the Metropolitan Railway). They will be given at 4.45 p.m. on Mondays and Thursdays. The first four meetings of this course will be devoted to a consideration of gastro-intestinal affections in children; the first will be given on May 15th by Dr. Bernard Myers, and the second on May 18th by Dr. T. Joekes; the third and fourth by Dr. Myers on May 22nd and May 25th. On May 29th Dr. H. E. Archer will demonstrate the Wassermann reaction and speak on its importance in general practice, and on June 1st Dr. H. Adamson will give a practical demonstration of skin diseases in children. The fee for the course is one guinea; full particulars can be obtained from the Secretary of the Fellowship of Medicine, 1, Wimpole Street, London, W.1.

A MEETING of the National Baby Week Council will be held at Carnegie House, 117, Piccadilly, W.1, on Tuesday, May 9th, at 3 p.m., with Dr. Eric Pritchard in the chair. An address on "Mortality in the First Month after Birth, and the Possibility of reducing it," will be given by Sir Arthur Newsholme, K.C.B., M.D., and an address on "The Milk Question" by Dr. Janet Lane-Claypon.

THE annual Congress of Ophthalmology of the United Kingdom will be held on May 11th, 12th, and 13th, under the presidency of Mr. J. Herbert Fisher. Papers will be read and discussions held in the house of the Royal Society of Medicine, 1, Wimpole Street, on the morning and the afternoon of May 11th, and the mornings of May 12th and 13th. On the afternoon of May 12th cases will be shown in the ophthalmic out-patient department of St. Bartholomew's Hospital, and pathological demonstrations of tuberculosis of the eye will be given at the house of the Royal Society of Medicine on the evening of May 12th. The business meeting of the society will be held at 5 p.m. on May 11th, and the annual dinner at the Langham Hotel on the same evening at 7.30.

OUR readers are acquainted with the work of the Vocal Therapy Society, which has formed a number of the shell-shock and neurasthenic ex-service patients into choirs known as "The King's Services Choirs." They are giving a massed choral concert to-day (Saturday, May 6th), at 3 p.m., at the Polytechnic Institute, Manresa Road, King's Road, Chelsea. Visitors will be welcomed.

THE North-East London Post-Graduate College, as already announced, will hold a special post-graduate course at the Prince of Wales's General Hospital, Tottenham, N.15, from May 15th to 27th inclusive. The course has been arranged in association with the Fellowship of Medicine and Post-Graduate Medical Association, and a syllabus has now been issued which is obtainable from the Dean. The fee for those who are not members of the Fellowship is £5 5s., or £3 3s. for either week. Those wishing to attend should send their names to the Dean by May 11th. In connexion with the course lectures will be given on several afternoons at 4.30; these are free to medical practitioners.

THE Medical Missions meeting in connexion with the two hundred and twenty-first anniversary of the Society for the Propagation of the Gospel in Foreign Parts was held at the Church House, Westminster, on April 26th, with Dr. J. Auriol Armitage in the chair. Addresses were given on the subject of foreign missions by Dr. A. F. Laws, of Ay-In Hospital, Korea, Dr. H. H. Weir, secretary of the Medical Missions Department of the Society, and Miss M. Taylor, of Tinnevelly and Delhi.

THREE HUNDRED cases of typhus fever have recently occurred at Frankfurt on the Oder. All boats coming from Russia are now subjected to quarantine.

THE Board of Trade has appointed a committee, under the Safeguarding of Industries Act, Part II, to report on the importation of optical and other scientific instruments into this country from Germany. It is alleged by associations of manufacturers interested in optical, photographic, and drawing instruments that, by reason of depreciation of the value of German currency in relation to sterling, the prices charged for German goods are below those at which similar apparatus can profitably be manufactured in the United Kingdom.

A MEETING of the National Health Society, with the Duke of Devonshire in the chair, will be held at the house of the Royal Society of Medicine on Wednesday, May 10th, at 5 p.m., when the Princess Christian will present certificates to the society's successful students. Among the speakers on the occasion will be Sir Arthur Stanley, G.B.E., and Professor Kenwood, C.M.G.

THE annual meeting of the American Medical Association will be held this year at St. Louis from May 22nd to 26th.

DR. JOHN MACMILLAN, J.P., of Newburgh, Fife, has been presented by his friends with a number of valuable gifts in recognition of his twenty-five years' strenuous professional services in the north of Fife.

A DINNER in recognition of her twenty-five years' work in the United States Public Health Service was given, on April 20th, to Dr. Sara Josephine Baker, director of child hygiene in the New York Department of Health.

FORTY free clinics for mental disorders are now conducted throughout New York State. During the past year nearly 5,000 persons attended these clinics, an increase of 34 per cent. over the previous year; more than half of those patients had never been under the care of State hospitals.

DR. MURK JANSEN of Leyden has received the Umberto I prize awarded every five years by the province of Bologna for the best work or discovery in orthopaedics. The previous recipients were Professor O. Vulpius in 1905, Professor W. Schulthess in 1910, and Dr. Vanghetti in 1915.

DURING May the Paris, Lyons, and Mediterranean Railway Co., W.1, will run a special carriage between Paris and Evian-les-Bains, attached to the 8.45 p.m. train from Paris (Gare de Lyon).

IN the week ending April 29th the number of deaths from influenza in the 105 great towns of England and Wales was 75, as compared with 93 in the previous week.

Letters, Notes, and Answers.

As, owing to printing difficulties, the JOURNAL *must be sent to press earlier than hitherto, it is essential that communications intended for the current issue should be received by the first post on Tuesday, and lengthy documents on Monday.*

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2630, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London;* telephone, 2630, Gerrard.

The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin (telegrams: *Bacillus, Dublin;* telephone, 4737, Dublin), and of the Scottish Office, 6, Rutland Square, Edinburgh (telegrams: *Associate, Edinburgh;* telephone, 4361, Central).

QUERIES AND ANSWERS.

SALINE TASTE.

DR. M. P. K. MENON (Bradford) writes: If Dr. Begg's patient will give up tea or coffee completely for a few days and thereafter indulge in these beverages only sparingly—say two small cups of tea or coffee (weak) a day—she would get rid of the saline taste completely. I have experienced this myself. I consider the taste is due to the excretion of some active principle of these beverages on the gums.

TREATMENT OF PARALYSIS AGITANS.

"E." writes, in reply to a recent inquiry: In some cases—perhaps one out of four—the administration of hyoscine hydrobromide will greatly lessen the shaking. A dose of gr.1/100 by mouth three times a day is necessary; gr.1/120 rarely succeeds. The treatment, if successful, can be indefinitely continued. In other cases, parathyroid tablets, gr.1/10 thrice a day, do great good.

INCOME TAX.

"A. W. Q." has been asked by the local inspector of taxes for a statement as to the amount of the professional debts due to him at December 31st, 1921, although he has for some years been assessed on the basis of cash receipts.

*** Unless some special fact (as, for instance, the purchase of an additional practice) enters into the case we see no reason why the cash basis should be abandoned, as would seem to be the intention of the local inspector. This point was discussed with one of the senior officials at Somerset House some short time ago, and a reference to our note in that connexion (December 10th, 1921, p. 1001) may assist our correspondent.

"J. M. M.," as an assistant with a fixed salary beginning his fourth year, wishes to know whether he can adopt a three years' average although the first year's remuneration was only for a period of about six months.

*** The ordinary rule is that the average must begin to operate as from the date when the remuneration begins to accrue. Unless there are some abnormal circumstances "J. M. M." will be liable to assessment for his first "paid" year on the income of that year itself. As regards subscriptions to the BRITISH MEDICAL JOURNAL and the purchase of medical books we are of opinion that these are allowable so far as is necessary to *maintain* the personal standard of professional efficiency.

"R. E. T.'s" private practice expenses exceeded his (first year's) receipts from that work, but he has been separately charged on the amount earned at casual employment at the Ministry of Pensions medical boards under Schedule E.

*** There is, we believe, no justification for putting the assessment under Schedule E instead of Schedule D, in view of the casual nature of the earnings, and for many years the Board of Inland Revenue has acquiesced in the practice of pooling miscellaneous fees from public or semi-public bodies with receipts from private practice. The position would be different if "R. E. T." held a substantial salaried position with a few casual private receipts.

LETTERS, NOTES, ETC.

THE CONFERENCE OF STAFFS OF HOSPITALS.

DR. G. C. GARRATT (Chichester) writes: Mr. Harman (April 22nd, p. 662) fails to meet any one of my objections, and it must by now be obvious, even to him, that they are entertained by a very large number of medical men. His quotation from the SUPPLEMENT is worthless as a reply, because it does not define the term "indigent." The policy of the Association defines an indigent person as one certified as unable to contribute in any way towards his maintenance and treatment. Let Mr. Harman, as a "reasonable man," now approach those "other reasonable men" who manage his hospital, and explain to them that a person who while in hospital can scrape together a penny a week, or who receives eggs, vegetables, or other assistance towards maintenance from home, is "*too rich*" to receive "free treatment" from a staff that insists on retaining the title "honorary" and rejects paupers. Then let him report in the JOURNAL their comments on the "fairness" and "justice" of this proposal "to all parties concerned." I note that the habit I have contracted of always endeavouring to look ahead before adopting a new policy likely to have serious consequences is distasteful to Mr. Harman. May I be permitted to hope that this attitude of mind is not universal among members of the Hospitals Committee, otherwise there will be a dangerous split in the ranks of the profession, followed by another debacle such as occurred in 1912.

TREATMENT OF CRAMP.

"M.D.EDIN.," a retired medical man, writes that he has been ill for nearly two years with rheumatic gout, effusion in the knees and ankles, oedema of the lower legs, and is greatly troubled with attacks of cramp in the legs. He cannot sit or walk without pain, and is relieved only when lying down or asleep. Many drugs and diets have been tried, in addition to electricity, ionization baths at home and at Harrogate, auto-serum, auto-suggestion; massage after baths has always seemed to aggravate the symptoms. His general health is good, the rheumatic symptoms better, but the cramp is worse. He has had much professional advice without relief, and would be grateful for any further suggestions.

"FOLLOWING UP" IN V.D. CLINICS.

MR. C. HEYGATE VERNON, F.R.C.S.E., Clinical Assistant, Bournemouth V.D. Clinic, sends us the following statistics, with the permission of Dr. W. E. Facey, medical officer in charge of the clinic, to publish them. They refer to the period of sixteen months from October 23rd, 1920, to February 21st, 1922:

A printed circular enclosed in a plain envelope *not* marked "confidential" is posted to a patient who has been absent for a period over a month from the date when the next attendance was advised. In only two or three isolated cases apparently have domestic troubles ensued, the cause being that the letter was opened by a relative from motives of curiosity or because the patient was absent from home. In every case a new patient is told, when his name and address are registered, that the information will only be used in the event of it becoming necessary to communicate personally with him.

Altogether 550 letters were written to patients, with a result that 152 have resumed attendance. Of the letters which did not bear fruit, 65 were returned through the Dead Letter Office, or produced the report that the patient had left the district. Three were reported dead, and 19 wrote reporting transfer to another clinic or doctor. Of the 152 who resumed attendance, 57 were ultimately discharged as free from disease and 51 are still attending and within measurable distance of a cure. That a second and even a third letter provides sufficient stimulus to cause resumption of treatment is borne out by the fact that 27 had two letters, 10 of whom have been cured, and 3 have had three letters, 1 being cured. Letters are written even to those whose attendance has ceased before the diagnosis is established, and of these 7 have been discharged as not suffering from venereal disease. Of the remaining 50 who were cured, 32 were men suffering from gonorrhoea.

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 33, 36, 37, 38, and 39 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 34 and 35.

THE following appointments of certifying factory surgeons are vacant: Warboys (Huntingdon), Muirkirk (Ayr).

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£ s. d.
Six lines and under	0 9 0
Each additional line	0 1 6
Whole single column (three columns to page) ...	7 10 0
Half single column	3 15 0
Half page	10 0 0
Whole page	20 0 0

An average line contains six words.

All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not so safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Tuesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.